PERSONALITIES

By George F. Taubeneck

Excitement

Detroit hasn't known such a spiritual uplift in the last two decades, declare oldtimers of the Motor City, as it has enjoyed in the last several weeks with the inspiration of the Detroit Tigers baseball team.

Couple of weeks ago we commented editorially on the amazing rise in a whipped city's confidence and prosperity which had resulted from the plucky and successful fight of Manager MICKEY COCHRANE and his supposedly ordinary baseball team to win the championship of the American League.

At that time the Tigers had not yet won the flag. As this is being written, they have just lost the seventh—and conclusive—game of the World Series to the St. Louis Cardinals. Detroit has been positively delirious. Haven't heard from "JESSE" JAMES or our other St. Louis correspondents yet, but we have no doubt that the Mound City is also unable to keep its collective mind on its business.

It certainly was true that practically no Detroit concern engaged in the refrigeration business—as manufacturer, supplier, distributor, or dealer—did any work to speak of last week. The executives were all at the game; and the rest of the force were gathered around radios. One of the commonest sights around Detroit last week was men walking into office buildings in the morning with midget radios under their arms.

Someone counted 27 radios in operation on the opening day of the series in the offices and factory of one of the leading refrigeration manufacturers here. And when we made a couple of long-distance telephone calls in search of news Friday (while the Tigers were in St. Louis) we found that in each of the major factories we called work was suspended during the broadcast of the games.

* * *

Grunow Rental Plan

Local dealers report that sales of radio sets—particularly the smaller and cheaper table sets—have jumped to new short-time highs in Detroit.

People's Outfitting Co., big furniture outlet and heaviest advertiser of Grunow radios and refrigerators in the Detroit territory, got good returns on a neat stunt.

This concern offered to rent a special "World Series" model Grunow radio set at a nominal charge. After the series, the rental charge would be considered part payment on the set, or as the down payment on one of the larger all-wave Grunow radios.

President BILL GRUNOW seized the opportunity to get into the spotlight which has been burning on the Tigers by publicly presenting each member of the club, at Navin Field, with a portable Grunow set and carrying case (see pictures on front page of this issue). Manager MICKEY COCHRANE received the biggest and best Grunow all-wave console in the line.

* * *

Kelvinator at the Series

J. A. "DOC" HARLAN, Kelvinator commercial sales manager, attended the second game as host to his father, Dr. FREDRICK J. HARLAN of Flint, Mich.

The latter is a particularly enthusiastic Tiger rooter, and was especially aroused by Hallahan's deliberate attempts to "outstare" the Detroit batsmen.

C. L. BARLOW, southeastern commercial district manager, enjoyed the second game from his hotel room in Atlanta, Ga. Georgia, Mr. Barlow advises us, is almost solidly pro-Detroit, still basking in the sunset glow of that mighty ex-Tiger, TY COBB, "The Georgia Peach."

R. R. LUDINGTON, Leonard assistant sales manager, sat in the grand stand for the first game. Ticketless for Game No. 2, he acted on an inspiration, rushed to Navin Field at 1:00 p. m., and landed one of the last bleacher seats.

VANCE WOODCOX, advertising and sales promotion manager, is one of those fellows who get around. Like others of the advertising and journalistic professions, he has a penchant for knowing people in the spotlight. Hence it is that Vance has an inside track to the Tigers, through friends, and was able to report this inside dope:

Item 1: CHARLEY GEHRINGER, greatest second baseman of all time and runner-up for the batting championship of the American League this year, surprised and dismayed all his Tiger fans in the first game by dropping a ball tossed to him at second base for a put-out, thus paving the way for two runs. The ball was eased to him from a distance of about 10 yards.

Charley declares that so highly excited and nervous was he that he *didn't see* the ball; he knew it was coming, but couldn't follow its flight. (As a one-time sports competitor and writer, we rise to remark that Gehringer didn't offer Vance a preposterous alibi; such a paralysis of the optical nerves under duress of extreme excitement happens not infrequently during big games—especially in football. Remember that when you curse a halfback for fumbling early in a game this fall.)

Item 2: On the night before he pitched one of the most remarkable World Series games on record, LYNWOOD "SCHOOLBOY" ROWE declared to friends that he would win the game on the morrow, but that an odd feeling in the pit of his stomach told him he would have trouble at first.

Sure enough, he allowed two runs in the first inning. After that—the "odd feeling" gone from his tummy—he retired St. Louis batters in one-two-three order inning after inning, yielding but one hit in the last nine innings of play.

* * *

Crossed Signals

Time after time after time Tiger batters watched the first pitched ball go past them for a called strike. Almost equally often Cardinal batters swung at—and missed—the first pitch, which would have been called a "ball" by the umpire had the St. Louis batsmen left their clubs on their shoulders.

Obviously the strategy of the St. Louis pitchers was to burn the first ball—as a general rule—over the plate. St. Louis batters, knowing this, evidently took it for granted that the Detroit pitchers did likewise.

Detroit pitchers, on the other hand, habitually wasted the first pitch. Detroit batters, remembering this habit of their own pitchers, would watch the first pitch of the *St. Louis* hurlers go by. Nobody on either team seemed to get the idea that the pitching strategy of the two staffs was utterly opposed.

* * *

Not in the Headlines

A little-touted member of Detroit's pitching staff is ELON HOGSETT, known as "the Chief" because of the supposition that Indian blood flows through his veins. All the hullaballoo has been over ROWE, BRIDGES, AUKER, and CROWDER.

Yet Hogsett, as relief hurler in two games (he wasn't in the unlucky seventh for a full inning), pitched—inning for inning—what was probably the most effective ball of the series. For instance, after the Cardinals had knocked TOMMY BRIDGES out of the box in the fifth inning of the third game (four runs had been scored off Bridges in the five innings), HOGSETT cooled the rampaging Cardinals, who were flush with the heat of their rally, and yielded but one unproductive hit.

* * *

Japanese Barnstormers

Sports writers from all over the land crowded the press box. Among the topnotchers present were GRANTLAND RICE, PAUL GALLICO, DAMON RUNYON, ALAN J. GOULD, BILL CORUM, DAVIS WALSH, and WESTBROOK PEGLER.

The slangmonger who came the longest distance was SOTARO SUZUKIX, who crossed the Pacific from Tokio, Japan, to cover the series for the *Yomiuri-Shimbun*, Tokio daily newspaper which has a circulation of 700,000.

"We have one baseball stadium in Tokio," Suzuki tells you, "that seats twice as many as Detroit's Navin Field. Baseball is our national sport now. Soon we hope to produce players for your own major leagues."

Suzuki has helped sponsor, promote, and choose an all-star American team which will barnstorm Japan this fall. BABE RUTH heads the American delegation, along with CHARLIE GEHRINGER of Detroit, "LEFTY" GOMEZ and LOU GEHRIG of the New York Yankees, JIMMY FOXX and Manager CONNIE MACK of the Philadelphia Athletics, EARL WHITEHILL of Washington, and others.

This team will play a series of exhibition games in 20 Japanese cities this fall.

* * *

'Dizzy' vs. 'Schoolboy'

The two pitching heroes of the current season, "SCHOOLBOY" ROWE and "DIZZY" DEAN, are as different in style and demeanor as CALVIN COOLIDGE and FRANKLIN D. ROOSEVELT. Both are quite young (Rowe—22, Dean—23), and both come from the southwest sagebrush (Rowe—El Dorado, Ark.; Dean—Holdenville, Okla.), but otherwise they are striking contrasts.

Rowe is quiet, diffident, modest, and almost bashful. He acts as if he respects his elders. When he leaves the mound after retiring the side in one-two-three order and receives standing ovations from the crowd, he does not grin and wave. Rather, he doffs his hat courteously but briefly, and does not look up or change expression.

Dean, on the other hand, is the born showman. Colorful, cocky, aggressive, active, he is given to gabbing with the press, to posing, and horseplay.

When pitching he always has the spotlight. When not in the game he contrives to get attention somehow—by grabbing the bass horn in a band and tooting at it lustily, by knocking balls out of the park in batting practice, by stealing bats from the opposing team, by cutting up monkeyshines for the crowd. While Rowe was warming up before pitching his first game, Dean came out of the Cardinals' dugout and gave the "Schoolboy" a bunch of free advice on how to pitch.

This Dean fellow ("Dizzy" the elder) has the most graceful pitching form we've ever seen—with the single exception of WALTER JOHNSON, the old Washington slab ace and present manager of the Cleveland Indians. When "Dizzy" pitches it is poetry in motion. He has rhythm, freedom, ease, poise, grace, and beauty. His wind-up is the prettiest sight in modern baseball.

Rowe, on the other hand, appears a bit awkward on the mound. His long legs spread far and gangling as he pitches, his windup isn't pretty, and his upright stance seems to have a bit of the scarecrow in its antecedents. But what the hell! The opposing batsmen simply couldn't hit what he pitched—when he was right. And that, after all, is the main point.

Dean, in spite of being bopped on the conk by a hard-thrown ball when acting as a substitute base runner in the fifth game, hurled three of the seven games, winning two of them—the last being the only shut-out of the series—and tossing a swell game the time he lost.

His younger brother, Paul, also won two games—keeping all the Cardinal wins in the Dean family.

Next week we'll tell you about Paul, who is no more "Daffy" than Jerome is "Dizzy."

* * *

Cashing in on Romance

In addition to all the thrill of conflict, Detroit baseball fans were treated to a side dish of romance. "SCHOOLBOY" ROWE's fiance, EDNA MARY SKINNER from his home town of El Dorado, Ark., came to Detroit during the closing days of the campaign for the American League pennant.

She proved to be quite a girl, and the Detroit papers made the most of her. Parties were given in her honor, "sob sisters" were assigned to write hundreds of words daily about her comings and goings and naive conversation, she was photographed as much as Mrs. Roosevelt, and she even consented to lend her name to a series of ghost-written stories about the games for one paper. Readers gobbled it all up avidly.

A local furniture store made the pair a present of a three-room outfit of furniture, shops gave EDNA MARY hats, gloves, and gowns in return for her testimonials and endorsements, and in the fortnight the two happy kids have taken in quite a swag of booty.

But they've had about as much privacy as a steamshovel operator in New York City . . .

Incidentally, the Cardinal shortstop, LEO DUROCHER, was married shortly before the series, and brought his very pretty bride—his second wife by the way—to Detroit for a honeymoon. Durocher's batting eye was apparently affected, for he didn't hit worth shucks—in the first five games. We suppose he placated his bride by singing: "I Only Have Eyes for You."

Readers of this kolyum may remember the story we told sometime ago about Durocher visiting the Streets of Paris at A Century of Progress, and finding a place where you could knock a girl out of a bed by hitting a plate with a baseball. Durocher bounced her out of her bed nine times in a row, and she quit her job in a huff!

* * *

Troubles of a Double

A. A. TRIMBLE of Cleveland is the spittin' image of WILL ROGERS (have you heard that crack: "So they called the baby 'Cuspidor' because he was the spitting image of his father"?). That caused him a lot of trouble.

He was beseiged during his stay at the Book-Cadillac hotel by autograph seekers, people asking him when he was going to make another movie, and those who wanted to hear him spout political opinion and philosophy.

Trimble finally solved his dilemma by pinning a sign on his back which read: "I ain't him."

* * *

Will Rogers et al

Among the celebrities present were WILL ROGERS, prizefighter BARNEY ROSS, and movie actors JOE E. BROWN and GEORGE RAFT. Rogers spent most of the time with HENRY FORD, and sat with the wizard of Dearborn in the latter's box.

Brown, who was once a minor league baseball player and later owner of the Kansas City Blues, engaged in an impromptu boxing match with comedian AL SCHACHT before the second game, with GEORGE RAFT as a referee. Ross was Brown's second.

Brown won by a knockout in the second round. Whereupon someone rushed up from the Tiger dugout and threw a bucket of cold water on Schacht. That wasn't in the act—at least as Schacht had written it.

Raft, the movie actor, picked up some spare change during his visit by dancing in a downtown Detroit night spot.

* * *

Huddle System

The Cardinals introduced a new type of baseball to American League rooters—the "huddle" system.

Detroiters had seen that used on the football field, but never before as a regular feature of a baseball game.

At least once an inning the St. Louis catcher and infielders would gather in a knot around the pitcher and talk things over. The board of strategy was rather effective, too, in the pinches.

* * *

Decision of a Genius

In the ninth inning of the second game Manager MICKEY COCHRANE of the Tigers made a decision which showed his baseball genius. The Tigers were one run behind. PETE FOX singled. Pitcher Rowe was next up to bat.

Ordinarily a pinch hitter would have been sent in to bat for the pitcher (pitchers are notoriously poor hitters; Rowe is considered an exception to this rule, but in that particular game he had fanned four times in succession). But that meant that Rowe would have to be removed from the game.

Cochrane sensed that if the tying run were put across, Rowe would be needed in the extra-inning sessions. So he took a chance on getting that run over, and let Rowe bat. Rowe responded with a bunt which helped Fox gain second. *Then* came the pinch hitter, the deadly GERALD WALKER, who hit a sharp single to score Fox.

For three more innings the game lasted, and for three more innings Rowe set the Cardinals back on their ears. It was a dangerous decision that Cochrane made, but it turned out to be eminently wise.

* * *

Comeback Hitter

Tiger First Baseman "HANK" GREENBERG, who broke up more ball games with his long-range clouting during the summer than PEGGY HOPKINS JOYCE has broken up homes, couldn't get going at the first of the series. He hit a lonesome home run (nobody on bases) in the first game, but otherwise failed to distinguish himself.

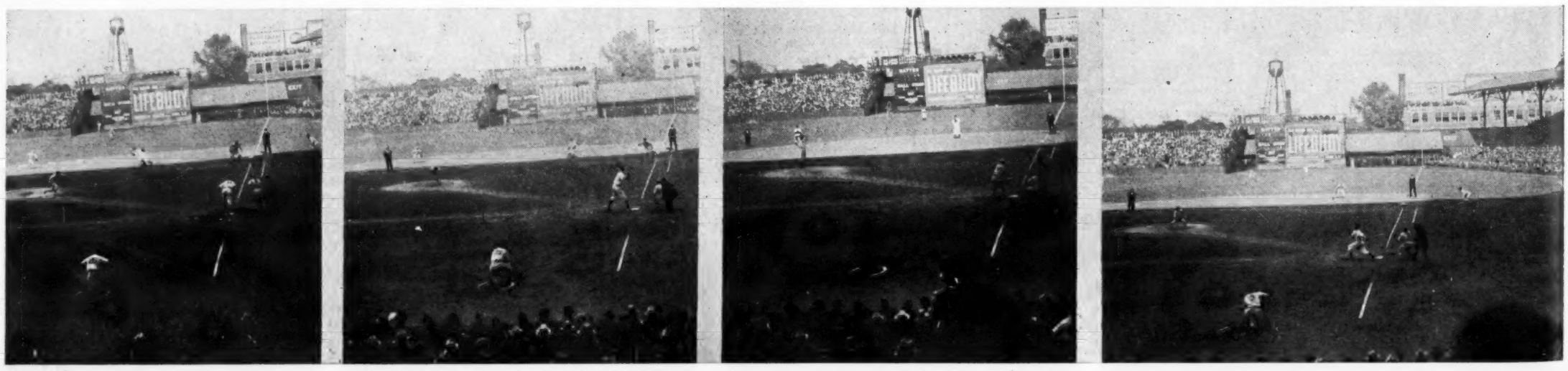
In the second game Greenberg was up six times with runners on the bases, and failed to hit four times. The other two times he was up he got walked. In the third inning Hank embarrassingly whiffed with the tying runs waiting on base, which sorry act he repeated in the sixth when the single run then needed to tie was on base.

When the series moved to St. Louis for the third game, Greenberg said he was due to begin hitting. But PAUL DEAN baffled him completely. So Manager Cochrane moved Greenberg back to sixth place in the batting order. That old campaigner, "GOOSE" GOSLIN, was pushed up into Greenberg's place in the clean-up (fourth batter) position.

Thus humiliated, Greenberg came back in the fourth game to hit safely four times out of five trips to the plate, including a double and a triple.

A strong wind prevented the triple from being a home run, and the double might have been a homer, too, had not an overenthusiastic rooter interfered with its progress and caused the invocation of a ground rule.

St. Louis Defeats Detroit in Bitterly Fought World's Series As City Closes Shop



(1) Tigers start a hit-and-run play on Pitcher Bill Hallahan. (2) "Schoolboy" Rowe at bat. (3) Rowe winding up for his pitch. (4) Pinch-hitter Gerald Walker smacking out the single that tied the contest and saved the game for Detroit in the second contest. These photographs were taken by Publisher F. M. Cockrell from a seat high up in the grandstand.

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THE JOHN CRERAR OCT 19 1934

Installation and Service Costs Discussed at Convention

Service Men Also Study Refrigeration Apparatus at First National Meeting

By J. T. Schaefer

CHICAGO—Methods of reducing service costs, making installations, shooting trouble, and other matters of interest were aired at the first national convention of refrigeration service men here last Thursday, Friday, and Saturday. Correct selection and application of various refrigeration apparatus were also discussed in the series of service talks on dehydrators, expansion valves, commercial refrigeration and air-conditioning coils, refrigerants, controls, and lubricants.

The meetings, which comprised the first annual convention of the Refrigeration Service Engineers Society, were held in a hall at 2111 W. Jackson Blvd., headquarters for the Chicago chapter.

Several times during open discussions, the questions of "unionization" and "city licensing" arose, but after heated remarks by both factions, the arguments were quelled.

At the final session it was decided that the object of the society should be purely educational, and these two questions are outside the scope of the national society, although local chapters may consider them at their own discretion.

The convention was called to order by Herbert Herkimer, president of the society and head of the Herkimer Institute, a New York refrigeration school. He introduced J. F. Nickerson of Nickerson & Collins Co., publisher of *Ice and Refrigeration* magazine.

Mr. Nickerson welcomed all out-of-town delegates to Chicago, and offered any accommodations at his disposal to help them see A Century of Progress and other points of interest.

Mr. Herkimer next gave the president's address, outlining the genesis of the society. It was organized, he showed, as the result of certain problems facing independent service men in New York City. Aiding in its organization were E. J. Merenda of New York (now treasurer of the society), and Mr. Nickerson who contributed his experience in the organization of several associations in the ice and cold storage fields.

As the result of banding together New York independent service men, Mr. Herkimer claims greatly improved relations between independents and manufacturers' branches — especially in the availability of replacement parts.

Next speaker was H. T. McDermott, secretary of the society, and editor of *The Refrigeration Service Engineer*, a monthly magazine which Nickerson & Collins brought out last year as the official organ of the society.

"In the 18 months of the society's existence," Mr. McDermott reported,

(*Continued on Page 9, Column 1*)

Service Firms Organize Master Association

NEW YORK CITY—Just organized to promote the interests of independent service and installation companies in New York City's five boroughs, Long Island, Westchester, and New Jersey is the Master Refrigeration Association, Inc., with temporary headquarters at 112 East 19th St. here.

Movement toward the organization started Sept. 29 when officials of many service companies in this area gathered at the invitation of the Utility Refrigeration Co. to discuss problems of the business. Another meeting followed on Oct. 4, and at the third on Oct. 9 the association was definitely formed.

According to E. S. Lape, secretary-treasurer, the association will make supplies, materials, parts, and accessories immediately available to members. Protective legislation has been started, and credit with bureau backing is to be made available. Customer rates will be standardized. Group purchases of materials and supplies are being made.

It will conduct wholesale handling of member advertising and sales promotion, make group insurance available at reduced rates, and supply legal counsel to members.

The group will meet again at 8 p. m. Oct. 19 at the Broadway Central hotel in this city to elect officers, establish certain policies, hear committee reports, and handle several general business matters.

Kelvinator Field Men Meet at Factory

DETROIT—The most expansive merchandising program ever mapped by Kelvinator Corp.'s commercial sales organization was revealed to the company's commercial field representatives at their annual fall conference held Oct. 9 to 13 at the factory here.

District managers, national direct sales managers, branch commercial sales managers, and public utility contact men attended the sessions, which were presided over by J. A.

(*Concluded on Page 5, Column 1*)

Special Door to Feature Fairbanks-Morse Line

CHICAGO — Executives of Fairbanks-Morse Home Appliances, Inc., met here Oct. 5 to view preliminary laboratory models of the new line of Fairbanks-Morse electric refrigerators for 1935.

The Glasser cabinet door patents, recently purchased by the company, were a major point in the conference. For the past few months models incorporating this cabinet feature have been presented before groups of women to test consumer reaction before final design is approved for production.

* * *

Peerless Opens 2nd Factory in Long Island City

CHICAGO—Peerless Ice Machine Co. of this city this week opens a New York factory, fully equipped for the manufacture of fin coils and refrigeration accessories which comprise the Peerless line, at 43-00 36th St., Long Island City, N. Y.

Production at the New York factory will be under direct supervision of Sigurd Benson, works manager of the Chicago factory for the past 14 years. M. E. Miller of the Chicago office will have charge of sales.

As fast as special machinery can be constructed and locations secured, factories will be placed in Texas and California, according to R. W. Kritzer, vice president of the Peerless Ice Machine Co.

Peerless fin coils are manufactured by a process in which the fin itself is wedged into the tubing without the necessity of passing "bullets" through the tubing or expanding the tubing hydraulically.

By this process fins are applied to a continuous length of tubing, the machine automatically applying the fins on ½ inch or ⅓ inch spacing for the length of coil desired, leaving spaces between fin sections which later form the return bends.

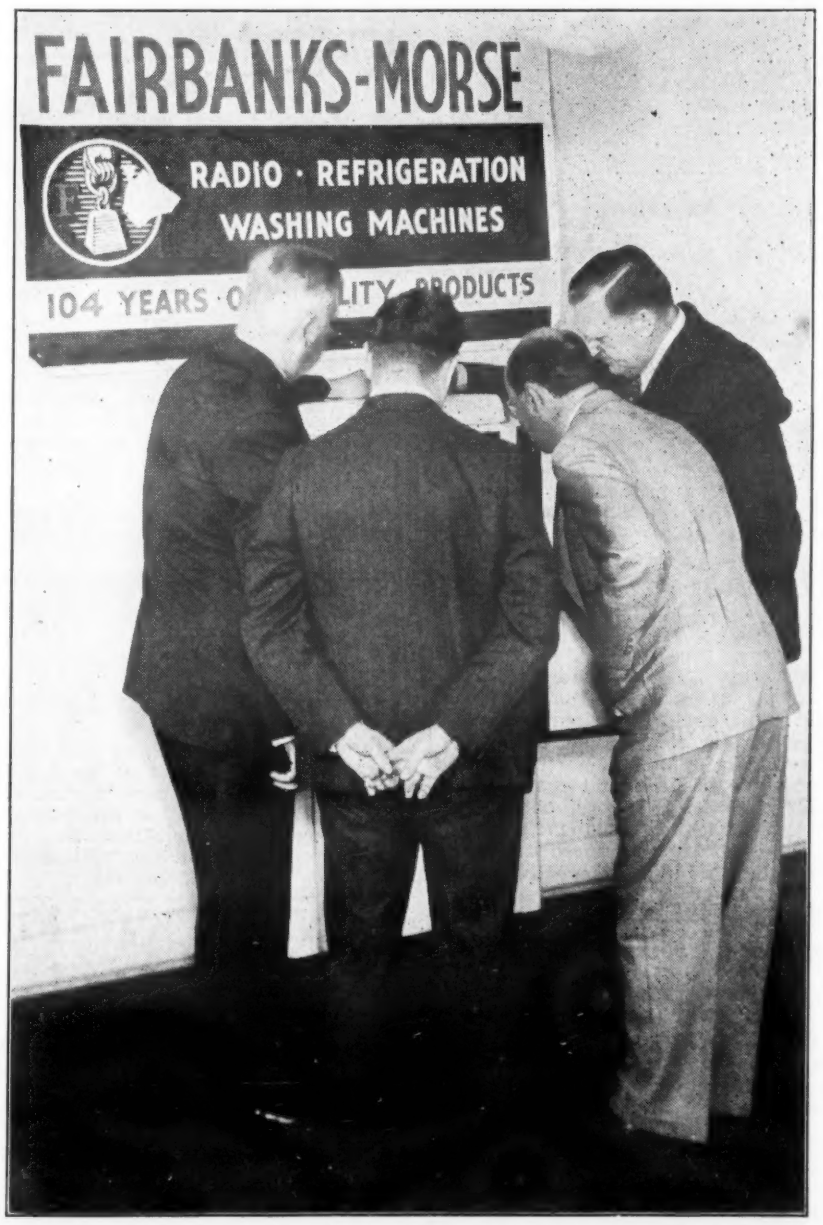
After the entire coil is finned in continuous tube it is then bent to the final form and end plates lipped over the return bends to complete the coil.

Inasmuch as this method of applying fins to tubing was entirely new, declares Mr. Kritzer, it was necessary to design and build the special machinery for the purpose. The designing and building of this machinery was done by A. F. Hoesel, chief engineer of the Peerless Ice Machine Co.

The New York factory will contain a complete set of this machinery capable of producing any one of the 24,576 possible fin coil combinations.

Although the Peerless Ice Machine Co. has discontinued the manufacture of refrigerating machines, for sentimental reasons the business will continue to operate under the same name, Mr. Kritzer stated.

Giving It the Once Over



Fairbanks-Morse executives gather around the laboratory draft of the company's 1935 electric refrigerator, which will feature the "Economizer."

New Commercial Equipment on Display at Dairy Show

Ice Cream Cabinets, Milk Coolers, Compressors, and Refrigerated Trucks among Equipment Shown

By John T. Schaefer

CLEVELAND, Oct. 15, 1934—New and improved refrigerating equipment of all kinds for the dairy industry is on display as an important part of the Dairy Industries Exposition which the Dairy and Ice Cream Machinery and Supplies Association is staging, Monday through Saturday, in the mammoth Cleveland Public Auditorium. In keeping with exposition's keynote "Modernize for Profit," new and improved types of ice cream cabinets, milk coolers with faster cooling speeds, more efficient refrigeration compressors, larger capacity ice cream freezers, refinements in refrigerated trucks, stylish new soda fountains and display cases, and even air conditioners for milk plants are being displayed.

During the exposition, these three organizations are holding their annual meetings: International Association of Milk Dealers, International Association of Ice Cream Manufacturers, and the Certified Milk Producers Association of America. It is estimated by the exposition management that 12,000 people will attend the various events before the week is over.

Today, a Students' Dairy Products Judging Contest was held, with entrants from some 20 land-grant colleges, each student to see how close he can come to determining the "score" of given specimens of milk, ice cream, butter, and cheese, as predetermined by the judges who are skilled "tasters."

Although dairy production processes have been highly mechanized within recent years, it is paradoxically admitted that subtle graduations of quality and taste are still largely dependent on human senses.

Colleges of the six winning teams will be authorized by the Dairy Machinery Association to establish a year's fellowship for research work in dairy products.

Some 300 cheese makers in the country have entered their finest products in the Fourth International Cheese Contest and Exhibit, under the supervision of Robert E. Hardell, Bureau of Dairy Industry of the U. S. Department of Agriculture. Eight different classes of cheese will compete—two types of American, brick, limburger, wheel Swiss, block Swiss, cottage and cream cheese.

Approximately 250 buttermakers have entered their best "makes" of cheese in the Seventh National Butter Contest and Exhibit, which will be under the supervision of Prof. A. W. Rudnick of Iowa State College. The contest is for cold storage butter.

Pioneers' Day, Friday, will honor the men who have been engaged in a commercial capacity in some phase

(*Concluded on Page 4, Column 1*)

WARNING!

In the vicinity of Madison and Beloit, Wis., and Rockford and Elgin, Ill., a man falsely representing himself as an agent of Electric Refrigeration News has been calling on the trade, soliciting subscriptions, and accepting money for these subscriptions without authorization. The same man, or another, has also obtained interviews on the claim that he was an editorial representative.

Readers of the News are asked to be on the watch for this man, as his progress may continue into other localities. Electric Refrigeration News has sent no subscription agents into the field. In accordance with its established custom, the News will continue to secure all subscriptions by mail. The names of all traveling editors are listed in the masthead of the paper.

Engineers to Handle G-E Conditioners

SCHENECTADY—Activity bearing on the marketing of General Electric air-conditioning systems has been transferred to the commercial engineering division of the General Electric air-conditioning department here, it has been announced by J. J. Donovan, manager of the department.

Since Oct. 1, Elliott D. Harrington, engineer of the commercial engineering division, has been responsible for the sale of air-conditioning systems, in addition to the duties he has performed in the past.

The transfer was effected because of the close relationship between engineering and sales in connection with the marketing of air-conditioning equipment requiring an important amount of fabrication in the field.

Valves & Fittings Code Authority Is Elected

PITTSBURGH—Five members of the Refrigeration Valves & Fittings Industry NRA Code Authority were elected at an industry meeting held Sept. 27 at Cleveland.

The results of the election have been submitted to the administration for approval, according to Stuart J. Swensson, managing director of the Refrigeration Valves & Fittings Manufacturers Association.

Members elected and their company affiliations are as follows:

J. S. Forbes, Kerotest Mfg. Co., Pittsburgh; F. L. Riggin, Mueller Brass Co., Port Huron, Mich.; A. J. Schulte, Bohn Aluminum & Brass Co., Detroit; F. C. Shafer, Imperial Brass Co., Chicago; A. J. Weatherhead, Jr., Weatherhead Co., Cleveland.

Vincent Bendix Plans to Enter Air Conditioning

SOUTH BEND, Ind.—Vincent Bendix, head of the Bendix companies, has announced in a letter to stockholders of the Automatic Products Corp. that the company has become the majority stockholder of the General Water Treatment Corp. and its subsidiaries, the Permutit companies and the American Zeolite Co., and that it will enter air conditioning.

The Automatic Products Corp. has no connection whatsoever with the Automatic Products Co. of Milwaukee, manufacturer of refrigeration valves and humidity regulators.

Form Air Conditioning Chamber of Commerce

CHICAGO—Through the efforts of A. Lincoln Wisler of the Air Cooling & Conditioning Corp., the United States Air Cooling & Conditioning Chamber of Commerce has been organized, with headquarters in suite 200 of the Engineering building, 205 W. Wacker Drive here.

Funds for promotion of the organization were furnished by Mr. Wisler, and at the first meeting held in Chicago recently, the following temporary officers were elected: Mr. Wisler, president; Robert Lee Cohan, attorney, vice president; H. Stuyvesant Cord, Cord Electric Mfg. Co., secretary-treasurer.

Appointments to the advisory council included: Richard Trane, Trane Co.; R. A. Folsom, W. R. Ames Co.; D. Handelan, Handelan Washed Air Co.; Emil Vilter, Vilter Mfg. Co.; C. E. Staky, Unit Heater & Cooler Co.; C. S. Stout, Marshall Furnace Co.; Stanley Wetherbee, Cary Mfg. Co.; S. Kauffman, Kauffman Air Conditioning Corp.; J. G. Kerch, 20th Century Heating & Ventilating Co.

Mr. Wisler says, "No contributions are to be solicited from the industry . . . It is a non-profit organization, and its purpose is to draw together the widely scattered factors in the industry, stimulate trade education, and push the commercial expansion of air conditioning."

Kids Recruited for Westinghouse Drive

MANSFIELD—Westinghouse dealers are ringing in the kids to help them sell refrigerators in their fall-and-winter "Safety Zone" campaign which is just getting under way. For their assistance, children between the ages of 8 and 14 will receive prizes from the retailer in their locality.

The plan is being launched by use of local radio broadcasts and newspaper advertising, in which Westinghouse dealers urge the youngsters to join "Cap'n Strong's Westinghouse Treasure Hunters," tell about prizes ranging from roadster bicycles to wrist watches, and invite them to come to the store for full information.

Children who heed the invitation will receive a broadside picturing the prizes, a "magic lucky coin," and "Clue Sheets"—a booklet with an explanation of Westinghouse features couched in simple language.

The child then makes the rounds of relatives and friends, gets information on the number in the family, the type of refrigeration used, and gets the prospects' signatures in the clue book. The slips are then turned over to the dealer, who passes them on to his salesmen. The signer guarantees only one thing—if he buys a Westinghouse before Christmas, he wants the child whose "clue" he signs to be given a prize credit.

Here, Westinghouse sales promotion men point out, begins the strategy of the plan. "Since the children seek their 'treasure' in either their own homes or where there is a strong attachment to them, the signers take a personal interest in helping the 'treasure hunters' get a prize before Christmas.

"Those who never thought much about electric refrigeration before become interested; those who planned to buy in the spring consider buying before Christmas; those who hover between Westinghouse and a competitive make begin leaning toward the former. And the child, bent on getting a prize, can be depended on to put continuous pressure on his prospects, especially his family and relatives . . ."

Knoxville Gas Co. Offers 3-cu. ft. Gas Unit

KNOXVILLE, Tenn.—To compete with the low electrical rates and cheap appliances being sold here under TVA auspices, the Knoxville Gas Co. is offering a 3-cu. ft. gas refrigerator. It is also promoting a 6-cu. ft. refrigerator which may be paid for on a basis of 27 cents per day, including the gas consumed. No down payment is charged, and three years are allowed for payment.

American Radiator Sponsors Program on NBC Chain

NEW YORK CITY—American Radiator Co. is now sponsoring the radio program featuring Queena Mario, metropolitan star, heard Sundays 7:30-7:45 p. m. over WEAF and NBC's 10 red network stations.

Rates Are Lowered By 2 Carolina Utilities

CHARLOTTE, N. C.—Rate reductions to electric and gas customers by the Duke Power Co. and the Southern Public Utilities Co., aggregating more than $1,300,000 a year, have been made and became effective with bills rendered on Oct. 1. The utilities operate in both of the Carolinas.

This reduction comes less than two years after that made in November of 1932, which chopped approximately the same amount from the companies' rate charges.

As the rates now stand, residential customers of the companies will pay 80 cents for the first 10 kwh. or less per month, whereas under the former residential schedule No. 1, there was a flat charge of $1 before any current was billed.

A special schedule for electric water heating is also in effect now. It provides for a charge of 1.5 cents per kwh. for the first 200 kwh. per month, and 1 cent per kwh. for all electricity over 200 kwh. per month, with a minimum bill of $1.

To secure this water-heating rate, the customer must use a storage-type water heater with at least a 10-gal. storage capacity for each 1 kw. of heating capacity. Further, hours for use of electricity under this schedule must be under the control of the company and may be limited to 15 hours of each 24.

Complete new schedule No. 1 for residential service is as follows: 80 cents for the first 10 kwh. or less per month; 6.5 cents per kwh. for the next 20 kwh. used per month; 3 cents per kwh. for the next 100 kwh. used per month; 2½ cents per kwh. for all over 130 kwh. used per month.

This is the new commercial electric lighting schedule No. 1-C, and shows reductions comparable with those in the schedule just listed: 80 cents for the first 10 kwh. or less per month; 6.5 cents per kwh. for the next 20 kwh. used per month; 5 cents per kwh. for the next 100 kwh. per month; 4.9 cents per kwh. for the next 870 kwh. per month; 1.9 cents per kwh. for all over 1,000 kwh. used per month.

Following is a tabulation which shows the percentage of reductions in the new residential and commercial schedules as compared with former residential schedule No. 1 and the former commercial schedule:

	Reduction	
	Residential	Commercial
50 kwh	6.8	8.8
100 kwh	11.6	12.5
200 kwh	15.7	15.1
300 kwh	16.0	16.2
400 kwh	16.1	16.7
600 kwh	16.3	17.2

Linxweiler Heads Exports Of May Refrigerators

NEWARK — New export manager of May Radio & Refrigeration Corp. here is Carl J. Linxweiler, formerly export manager of General Motors Radio Corp. and president of the Franklin Radio Corp in Dayton, according to D. W. May, head of the May organization.

Wesco Elects Clark Vice President

EAST PITTSBURGH—Bonnell W. Clark has been appointed vice president and general manager of the Westinghouse Electric Supply Co., according to F. A. Merrick, president of that organization. H. W. Gansman and R. J. Holtermann are newly elected vice presidents.

Mr. Clark joined the Westinghouse Commercial Investment Co. as special agent in 1925, later becoming assistant to the vice president, and in 1927 receiving the appointment of general manager. When the organization's name was changed to Westinghouse Electric Supply Co., he retained his position as general manager. His headquarters are at 30 Rockefeller Plaza, New York City.

Mr. Gansman, upon graduation from the University of Pennsylvania with a degree in mechanical engineering, became an apprentice with the Westinghouse Electric & Mfg. Co. at East Pittsburgh, and has been with Westinghouse during his entire business career.

In 1920, when Westinghouse decided to build up a distributing chain, he was given management of the first institution acquired. In 1931 he came to New York to become general sales manager of the Westinghouse Electric Supply Co. His headquarters are at 150 Varick St., New York City.

R. J. Holtermann, whose headquarters are in the San Francisco offices of Westinghouse Electric Supply Co., started with the Holabird & Reynolds Electrical Supply Co. in San Francisco. This concern later became part of Fobes Supply Co. which, in 1923, was acquired by Westinghouse interests.

In 1932 he was made district manager for Westinghouse Electric Supply Co.'s entire operation west of the Rocky Mountains.

San Francisco Appliance Group Directors Named

SAN FRANCISCO—Complete list of directors of the San Francisco unit of the Electric Appliance Society of Northern California was announced by G. A. Milton, Pacific Gas & Electric Co., secretary of the San Francisco unit.

Officers and directors are as follows: Lee Blair, Blair Hardware & Electric Co.; C. O. Eberhart, Eastern Outfitting Co.; Jesse Eoff, Dimmer Hardware Co.; Guy Farwell, Sterling Furniture Co.; F. S. Fenton, Easy Washing Machine Corp.

E. M. Frellson, General Electric Supply Corp.; Irving Harris, Redlick Newman Co.; Roy Hocking, W. B. Hocking Hardware Co.; Roy Hurd, Hale Bros.; Roy Kimberlin, Graybar Electric Co.

R. F. McDonald, Westinghouse Electric Supply Co.; George Plevin, Nathan-Dohrmann Co.; Eli Popovich, The Emporium; H. B. Rector, Electric Appliance, Inc.

M. H. Seid, Dowd-Seid Electric Co.; Caleb Sharrah, Thompson & Homes; F. G. Shultz, The White House; M. G. Sues, Leo J. Meyberg Co.; and Frank Talcott, Pacific Gas & Electric Co.

Rakovan to Direct Modern Coal Burning Advertising

CHICAGO—George Rakovan, formerly sales promotion manager of the Toridheet oil burner division, Cleveland Steel Products Corp., has been appointed advertising and sales promotion manager of the Modern Coal Burner Co., a subsidiary of the Peabody Coal Co., manufacturer of the Peabody stoker.

Mr. Rakovan was also formerly connected with the Silent Automatic Corp. of Detroit.

Hotels See Demand for Portable Kitchen Units

CHICAGO—Comment the editors of the *Hotel Monthly* in their August issue: "The demand seems to be for a combination electric hot plate-electric refrigerator unit of portable type, suitable for use in hotel rooms, particularly where the hotel caters for both transient and permanent patrons. Our guess is that a hundred thousand hotel rooms offer a prospective market for this utility."

Los Angeles Distributor for Automatic Washers Named

LOS ANGELES—Listenwalter & Gough Co., 827 East First St. of this city, are new distributors for the Automatic Washer Co., Newton, Iowa, W. Neal Gallagher, president of the washer company, announced recently.

The announcement followed a scouting trip to Los Angeles trade territory made by Mr. Gallagher. The visit was caused by recent steady increase of Pacific Coast household washer and ironer purchases.

Takes on Extra Duties

CLARENCE F. (Sandy) PRATT President of the California Refrigerator Co., has been made head of the Outdoor Christmas Tree Association of California.

Memphis Store Opens Appliance Department

MEMPHIS, Tenn.—What executives of the establishment termed a "complete promotional program" heralded and attended the recent opening of a General Electric appliance department in Lowenstein's department store here. Several thousand persons visited the G-E displays on the first day.

The store's comprehensive promotional activities included newspaper advertising, news stories, window displays, radio broadcasts, cooking demonstrations, use of a General Electric kitchen coach, special menu cards, "New Art" recipe booklet sales, and minor attention-getters.

Day before the opening, full page advertisements in Memphis papers invited the public to visit the G-E department. Previous advertisements had spotlighted the G-E kitchen and features of the dedication program. Considerable space was given to General Electric's first Memphis showing of its Liftop refrigerator. Local papers also carried news stories on the dedicatory ceremony.

Two of Lowenstein's main windows contained displays of G-E products and called attention to the new department. In addition, there were spot displays of G-E appliances on all floors, with placards inviting patrons to call at the new section.

During the opening, a kitchen coach was parked at the store's main entrance, and the organization's 400 employes wore badges urging customers to see the G-E merchandise on the eighth floor. In the store's dining room, girls clad in artists' smocks sold New Art recipe books.

Menu of the opening day luncheon consisted of items prepared from the New Art books, and showed numbers of pages on which the recipes could be found. Fifteen hundred of these menus were distributed to persons in downtown Memphis and in the store. On the tables in the rastaurant were miniature G-E salt and pepper shakers.

During the opening days of the department's operation, there were daily appliance demonstrations and lectures on kitchen planning. Miss Edwina Nolan, G-E home service director, spoke four times each day on kitchen science. Radio broadcasts were made from the G-E department by Miss Nolan and the store's Vice President Scarff.

One of the department's biggest drawing cards was a daily cooking demonstration in the General Electric kitchen by M. Gilbert Blanc, chef of the Hotel Peabody in Memphis.

F. D. Spoor to Manage Sales of Loveless Co.

BATH, N. Y.—F. D. Spoor has been appointed sales manager of the Loveless Distributing Co. here, according to L. M. Loveless of that company.

The Loveless organization was recently appointed distributor of Sparton radios and refrigerators.

American Radiator In Dealer-Aid Drive

CHICAGO—Five thousand contractor-dealers have signed up for the American Radiator Co.'s dealer-aid campaign, largely as a result of the Visomatic demonstration given by the company at the National Industrial Advertisers Association held in Cincinnati recently.

The demonstration was mainly concerned with giving plumbing and heating dealers an accurate picture of how the National Housing Act worked in the sale of heating equipment.

Dealer-help of a new type, provided by American Radiator Co., is a flag for the front of stores announcing that information on loans may be obtained within.

To further stimulate the modernization idea, American Radiator Co. has renewed its radio advertising; launched a newspaper campaign of considerable proportions, and secured the names of 4,000 home owners who have expressed an interest in modernization by asking for the company's budget book. Of this number, 28 per cent signified a direct interest in heating equipment.

Tritle Is Appointed to Durable Goods Group

WASHINGTON, D. C.—J. S. Tritle, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., was appointed to the new Durable Goods Industries Committee and the finance committee at the recent meeting held at Hot Springs, Va., by representatives of durable goods industries.

At the same meeting E. O. Shreve, General Electric Co., Schenectady, was appointed a member of the organization committee.

Policy of the new durable goods industries committee is to "continue to analyze the conditions interfering with re-employment, including governmental regulation of industry and the supply of capital to private business upon which these industries must rely for support, also proposed plans for industrial reform and social changes of such a character as to discourage new enterprise."

Norge Posters Feature Tigers 'Extra Power'

DETROIT—"Extra Power Makes Champions—Ask the Tigers or See Norge." That was the copy theme of a large poster showing a left-handed slugger against a big baseball background which Norge scattered through this baseball-mad town, at World Series time.

Kowfeldt Will Represent Standard Stove Co.

TOLEDO — Appointment by the Standard Electric Stove Co. of Guy C. Kowfeldt as district representative for the Minnesota and central northwestern territory with headquarters in Minneapolis, has been announced.

Dean G. Reitz, Kansas City, was also appointed district representative in western Missouri, Kansas, and Oklahoma.

8 New Ranges Installed In Soviet Embassy

WASHINGTON, D. C.—Eight ranges and two 2-burner hotplates were recently installed in the Soviet Embassy here by the Standard Electric Stove Co. of Toledo.

On the TARGET

Getting business is a good deal like hunting. Shooting must be done where game (prospects) abound. Hunters must have, not only good weapons but correct ammunition and, finally, must know how to hit the target.

All-year round Copeland distributors are registering "on the target", scoring perfect bulls-eyes in the shooting match for refrigeration business.

It is natural enough when consideration is given to the effectiveness of their weapons:

(1) Correctly designed commercial and domestic units.
(2) Reasonable prices and fair discounts.
(3) Seven domestic models in Porcelain and Porceloid and 21 Commercial models.
(4) Public acceptance based on the dependable performance of several hundred thousand Copeland units, some in service as far back as 1918.
(5) Rapid service on parts and replacements.

To Distributors

If you want "good hunting" from now on, investigate the Copeland franchise, which grants you exclusive "shooting rights" in territory where prospects are plentiful.

COPELAND REFRIGERATION CORP., Mount Clemens, Mich.
Division of Winslow-Baker-Meyering Corp.

Copeland
DEPENDABLE *ELECTRIC* REFRIGERATION

TEMPRITE
Instantaneous Cooling
"The leading cooler for water, beer and other beverages"
Write for Catalog
Temprite Products Corporation
(Formerly Liquid Cooler Corporation)
1349 Milwaukee East :: Detroit

RANCO KR Features Advances In Overload Construction

- The overload coil is insulated with ceramic material and is self-centered in the overload body, where there is greatest heat transfer with a minimum loss, thus giving accurate motor protection against overload.

RANCO THERMOSTAT

THE AUTOMATIC RECLOSING CIRCUIT BREAKER COMPANY
1300-10 Indianola Avenue, Columbus, Ohio

46 Companies Exhibit Electrical Products At Buffalo's Show

BUFFALO — Forty-six companies conducted booths exhibiting electrical products at the Electric and Radio Progress Exposition held here last week in Elmwood Music Hall, under the direction and sponsorship of the Electrical League of the Niagara Frontier.

In addition to the display of the latest in radio and electrical devices, various entertainment features were offered. The "House of Magic," a feature popular at A Century of Progress in Chicago, was presented several times a day.

"Electrical Circus," also a popular attraction at the World's Fair, illustrated the freakish pranks electricity can play in the future at the verbal command of man.

"Hall of Black Light," "Electrical Man," "Electrical Eye," "Temple of Light," and "Sound Oscillograph" were other attractions featured.

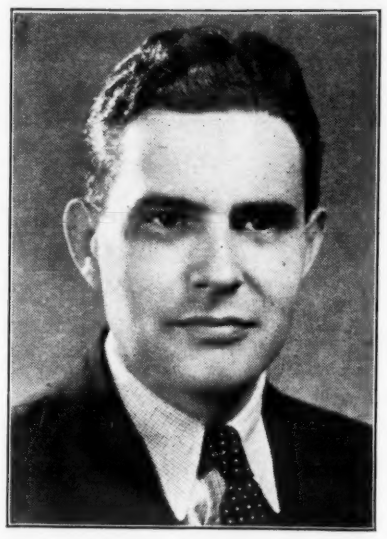
Prizes worth $3,600 were given away during the six-day exhibit. They included electric refrigerators, ranges, ironers, washers, console radios, table radios, sun lamps, automatic toasters, coffee makers, egg cooker set, waffle irons, kitchen mixers, fans, heater, heating pads, and cleaners.

George J. Reichert was general chairman for the exposition; H. I. Sackett, general vice chairman; L. A. Woolley, treasurer; Samuel S. Vineberg, show manager.

Alfreda Stanley Joins Piggly Wiggly

CINCINNATI—Alfreda Stanley, formerly assistant to E. H. Campbell, manager of sales promotion department, Rex Cole, Inc., New York City, G-E distributor, is now assistant advertising manager of the Piggly Wiggly Corp. of this city.

Promoted by Leonard



H. H. Dobberteen new assistant to Sam Mitchell, Leonard advertising manager.

Cooking School for Boys New Promotional Stunt Of Oklahoma Utility

CAPITOL HILL, Okla.—Something new in cooking schools is being sponsored by the Oklahoma Gas & Electric Co. in its quarters here. Weekly sessions are being held for kids—not girls, but boys, aged 12 or about that.

Miss Clestia Meyer, chief of the utility's home economics department who conducts the school, feels that youngsters will do a lot toward promotion of electric kitchen equipment at home, if they take a liking for cooking. Right now, some 20 lads are taking the course, which isn't confined to preparation of hot dogs and fried potatoes. Steak-broiling and rarebit-making are "in," too.

PWA Sets Policy on Power Plant Loans

WASHINGTON, D. C.—Administrator Ickes of the Public Works Administration last week made a definite statement concerning the PWA policy with respect to supplying public works money for municipal power plants.

Mr. Ickes declared that public works loans to cities wishing to sell their own power will not be made unless they are able to sell power cheaper than the utility and still earn enough to pay off the PWA loan.

The administrator stated that he believes loans for municipal power are socially desirable because State laws authorize city-owned electric plants.

However, before a loan is made, PWA gives the power company a chance to reduce rates at least as low as those the city would charge for its municipal power. If the company does this, PWA takes steps to see that the rates will not be boosted right back where they were, and then refuses to make a loan.

Liftops Are Installed in Apartment Kitchens

SAN FRANCISCO—H. B. Rector, branch manager for Electric Appliances, Inc., G-E distributor for San Francisco, has installed G-E Liftop refrigerators in seven San Francisco apartment buildings and four combination refrigerator-ranges in the Glide Foundation Apartments.

The Liftops were installed in the smaller kitchens, heretofore not equipped with electric refrigeration. This type of installation, according to Rector, offers quite a sizable market opportunity for small, inexpensive refrigerator models.

The installation of the four combination units, said Rector, were the forerunner of equipping all suites in the Glide Apartments with the new models.

Delinquent Accounts In Further Decline, Redisco Reports

DETROIT—Breaking its all-time record for the second successive month, Refrigeration Discount Corp., Kelvinator subsidiary, on Aug. 31 showed the smallest percentage of delinquent accounts in the organization's history, according to figures released Oct. 10 by C. M. Armstrong, vice president and general manager of the finance company.

At the end of August, Mr. Armstrong's statement revealed, instalments receivable more than 60 days past due stood at 11/100 of 1 per cent of the total business on the firm's books, despite the fact that customer accounts broke the company's all-time record for total volume.

The facilities of Refrigeration Discount Corp. are confined to Kelvinator products, in the distribution of which the firm has been a factor since 1926.

Kelvinator dealers are not obligated to use its services, but it is used almost universally by Kelvinator outlets.

2 Cleveland Apartments Get G-E Liftops

CLEVELAND—Two of the first Cleveland apartment house installations of G-E Liftop refrigerators were those made recently in the Belden hotel and Clifton Manor apartment house here, according to General Electric specialty appliance sales department.

The Belden hotel is owned and operated by the Albert Pick Co. of Chicago. Clifton Manor is operated by A. D. Fraser, Inc., one of Cleveland's large operators of apartment buildings.

Installations were made by Electrical Housekeeping, Inc., Cleveland G-E distributor.

Allen Appointed to New NRA Position

WASHINGTON, D. C.—The National Industrial Recovery Board last week announced the appointment of Byres H. Gitchell of New York as special adviser on organization and functions of code authorities and W. L. Allen of New York as special adviser on general NRA organization.

These advisers will make studies in their fields, and present reports and recommendations to the board based on their investigations.

Mr. Allen was one of the first deputy administrators of the NRA. He conducted hearings on the code for the electrical manufacturing industry and on the radio industry's petition for exemption from the electrical code. He was for many years prominent in the steel industry and was, at one time, chairman of the board of the Sheffield Steel Corp.

Mr. Gitchell has been serving as administration member of the men's clothing code and the dress manufacturing code. He has been secretary of the Chamber of Commerce in Binghamton, N. Y., and Detroit. He was at one time general manager of Stern Bros., New York department store.

Trailer Used to Exhibit Colonial Kitchens

PHILADELPHIA—In order to prove the serviceability of their product, the Colonial Stove Co. of this city mounted two Colonial Romance ensemble kitchens, back to back, on a trailer, attached it to a salesman's car, and put it into service.

The units have traveled over 8,000 miles, between New York, Newark, Philadelphia, Baltimore, and Washington, unprotected in all kinds of weather, and are in perfect shape with the exception of one small door that was damaged by boys throwing stones.

QUIET

—because of

VULCANIZED RUBBER CRADLE MOUNTING

The owner of an electric refrigerator or air conditioner doesn't want to "put up" with noises and vibration from the electric motor—and he doesn't *have* to—when that motor is a Delco. For in Delco motors, quietness is assured by a special *Vulcanized Rubber Cradle Mounting*. The rubber is vulcanized to two plates, one attached to the motor and one to the mounting bracket. These two plates hold the rubber permanently in place, yet permit it to absorb all vibrational noises. Manufacturers *know* that owners appreciate the quietness which this feature provides. They know that they can always count on the quiet operation of Delco motors—just as surely as they can rely on Delco's all-round dependability and long life. As a result, they are turning to Delco more and more when engineering electric motors into refrigerators and air conditioners.

NRA MEMBER U.S. WE DO OUR PART

DELCO PRODUCTS CORPORATION, DAYTON, OHIO

COMMERCIAL REFRIGERATION

New Refrigeration Equipment Is Exhibited at Dairy Show

(Concluded from Page 1, Column 1)

of the dairy industries continuously since 1905 or earlier. A special exhibit has been set up at the exposition for the pioneers, presenting early equipment, and a special play, written expressly for the pioneers, will be presented at the annual banquet of the International Association of Ice Cream Manufacturers at the Hollenden hotel on Friday night.

Frigidaire Displays Milk Cooler

Among the new milk coolers shown at the exposition is Frigidaire's new "Flowing Cold" model which embodies forced circulation of refrigerated water among cans of milk. Refrigerant is expanded into copper tubes submerged in the water bath, and circulation is maintained by means of a small water-circulating pump.

Novel feature of this milk cooler is its method of maintaining the water level at the top of the milk cans at all times, regardless of the number of cans being cooled. This is done by a "balancing tank" into which the water spills from the can-high level kept in the can compartment.

Frigidaire also shows its complete line of ice cream cabinets, its 1934 line of compressors, water coolers, bottle coolers, and air conditioners.

In the Frigidaire exhibit were the following men from the main office in Dayton: B. J. Van Doren, A. C. Doak, B. R. King, R. B. Ambrose, E. E. Ronech, J. R. Killen, M. D. Weisenbarger, J. G. King, F. A. Kinch, W. V. Richards, and Paul Bunger, in charge of the display. J. G. Miller of Detroit and Frank Tracy of Cleveland were also on hand.

Kelvinator Ice Cream Cabinet

Kelvinator's exhibit features a new line of ice cream cabinets with greater capacity for storing packaged ice cream. The company has a special demonstration stand erected to show how several different temperatures can be held in various compartments of an ice cream cabinet by adjusting the throttling valve.

Water coolers, Victor and Esco milk coolers, beverage coolers, an air-conditioning unit, commercial condensing units (one for farm use connected up to a Fairbanks-Morse gasoline engine), and a refrigerated truck are on display in the Kelvinator exhibit. The refrigerated truck is equipped with Kold-Hold units.

On duty in the Kelvinator exhibit were A. H. Reinach, E. R. Legg, H. J. Priest, E. R. Kelley, D. J. Bowen, A. J. Lutz, R. J. Schew, A. P. Hawkins, R. M. Martin, and P. B. Toohey. G. W. Mason, H. W. Burritt, and J. A. Harlan are also expected.

Kold-Hold Mfg. Co. is exhibiting its new forced-convection unit for refrigerated trucks as well as its standard Kold-Hold truck systems. The new forced-convection unit employs a fan through series passageways between a bank of Kold-Hold units and thence into the truck body.

It is intended primarily for large motor trucks, according to W. G. Farnsworth, general manager of the company. Large trucks can be provided with a movable insulating blanket to separate the low-temperature space from a normal-temperature storage space. The fan motor automatically stops when a door is opened, so as to reduce refrigeration leakage.

In the Kold-Hold exhibit is a Chevrolet truck built by Batavia Body Co. and using Kold-Hold cooling units. It has a 450-gallon capacity, and employs a Universal Cooler condensing unit.

Ammonia Truck Shown

Another Kold-Hold truck at the show is a 300-gallon body of the Beatrice Creamery Co. This is built for circulation of ammonia to cool Kold-Hold coils at night when the truck is off-duty, ammonia being supplied from the stationary dairy plant.

Representing Kold-Hold at the show are Mr. Farnsworth; A. S. McGuffey, chief engineer; H. J. Burman; J. R. Crissman; W. J. Edmunds; Louis Block; A. D. Greenlee; and Mrs. D. S. Conrad.

G-E Displays New Truck

General Electric is displaying the new G-E mechanically refrigerated truck, with H. M. Harrington, L. S. Cooper, C. T. McLoughlin, G. F. Dougall, and J. F. Walker in attendance.

Universal Cooler shows several commercial condensing units and a McCray display case. Thomas Blockett of Universal dairy division is in charge of the display. Harry Thompson and T. S. Pendergast are expected later in the week.

Ice cream freezers for brine or direct expansion of refrigerant are shown by the Emery Thompson Machine & Supply Co.

Grand Rapids Cases

The Grand Rapids Cabinet exhibit, in charge of E. M. Fritz, general manager, includes ice cream cabinets, "ZerOviZ" low-temperature storage and display cases for packaged ice cream and special forms, fountainettes, back-bars, and a refrigerated buttermilk dispensing cabinet.

Frick Co. visualizes operation of its new electric control valves with a demonstration set-up in connection with a Frick "zig-zag" instant water cooler for dairy refrigeration. The display also includes a 5x5-in. ammonia compressor (cut away to show its operation), a milk cooler, and a ⅓-hp. Frick methyl chloride condensing unit.

C. Nelson Mfg. Co. is exhibiting a complete line of ice cream cabinets (both brine and dry types), a fountainette, hardening cabinet, and dispensing cabinet.

Waltham System, Inc., is featuring its triangular cartridges filled with eutectic brine. These are frozen at a large low-temperature plant, and furnish refrigeration as they thaw out in ice cream cabinets or refrigerated trucks.

Solid CO-2 Cabinet

American Radiator Co. is making first showing of its new development—an ice cream cabinet using solid carbon dioxide. Known as the "Siphotherm," the new cabinet embodies a novel system of controlling the rate of refrigeration.

Jacketed around a bunker for 50 lbs. of solid carbon dioxide is sealed a secondary refrigerant which circulates by natural convection to conduct refrigeration from the carbon dioxide to the ice cream compartments.

Rate of flow of the fluid is automatically controlled by expansion and contraction of the liquid. When the cabinet is warm, the liquid is expanded and spills over into a novel sleeve arrangement at a faster rate due to its higher level, and vice versa. This sleeve is manually adjustable for various cabinet temperatures desired.

Representing the American Radiator Co. at the exposition are Lin Butler, T. E. Carpenter, J. H. Remick, Jr., and Lon Eggleston.

Vilter Mfg. Co. is featuring its Pak-Ice system for making small crystals or larger briquettes of water ice for various uses by the dairy industry.

Creamery Package Co. displays, among a host of other dairy equipment, both self-contained ammonia condensing units and the larger compressors for separate installation of condenser, etc. It shows one large-capacity compressor direct-driven by a 125-hp. synchronous motor at 300 r.p.m.

Creamery Package air-cooling units for milk storage or ice cream hardening rooms are also on exhibit.

York Milk Room Cooler

A new milk room cooler (a large floor-mounted blower unit) is being shown by York Ice Machinery Corp. in its full line of dairy manufacturing equipment. In the York exhibit also are ammonia-cooled ice cream freezers, milk storage tanks, York's plate-type pasteurizer, a surface cooler, and a cylindrical pasteurizer.

A newcomer to the exposition this year is Driice Appliances, Inc., of Mt. Vernon, Ill. This company displays a farm milk cooler and an ice cream cabinet, both cooled by solid carbon dioxide.

Louis Allis Co.'s new "Dynamatic" drive for truck refrigeration systems is featured in an operating demonstration in the Allis booth. It drives a Curtis condensing unit connected up to a forced convection truck cooling unit built by Refrigeration Appliances, Inc., of Chicago.

In charge of the Dynamatic drive is Charles Norton, while H. J. Krackowizer is in attendance on the cooling unit.

Anheuser-Busch is exhibiting a complete line of ice cream cabinets (using Copeland compressors), hardening cabinets, and a refrigerated truck using the Whitaker-Upp constant voltage generator drive.

For descriptions of additional exhibits, and more data on the new developments mentioned here, see next week's issue of the NEWS.

Refreshment Hour on a Hollywood Movie Set

This line of lovelies from Eddie Cantor's new musicomedy, "Kid Millions," park contentedly on a Frigidaire ice cream cabinet while eating ice cream under orders of the director, who ordered it kept on hand throughout the shooting of scenes so that the girls would be refreshed.

Kold-Hold Develops Forced-Convection Cooling System for Trucks

LANSING, Mich.—For applications requiring temperatures within the range of 35 to 60° F., Kold-Hold Mfg. Co. has developed a forced-convection refrigeration system for refrigerated trucks.

The Kold-Hold forced-convection system consists of an insulated housing containing three Kold-Hold cooling units, usually installed in the front end of the body, connected to ceiling ducts through which the air of the body is circulated by means of a thermostatically controlled blower to furnish refrigeration as and when desired.

The Cryohydrate in the Kold-Hold units is frozen by means of either electric or engine-driven compressor mounted on the truck, or by hook-up with a central plant or compressor located in the garage.

The forced-convection unit housing measures 38 in. high, 67 in. wide, and 30 in. deep. The entire system, including ducts and blower, weighs approximately 1,000 lbs. exclusive of the condensing unit.

It is claimed that the forced-convection system will provide uniform distribution of refrigerating effect to all parts of the body, or any part in which refrigeration is desired, with a variation of less than 5°.

A heavily insulated curtain, and control dampers in ceiling ducts, make it possible to confine refrigerating effect to any portion of the body, thus permitting the hauling of mixed loads.

The blower need not be operated when the truck doors are open, or when non-refrigerated payload is carried, thereby conserving refrigeration for actual service.

Kold-Hold cooling units are permanently installed and are recharged simply by plugging the compressor motor connection into the power line, or by hook-up with the plant system when the truck is idle.

Wayne Spinks to Handle Hussmann Cases

ST. LOUIS—Allied Store Utilities Co. of this city, manufacturer of Humid-I-Coiled Hussmann-Ligonier commercial refrigerators, recently announced appointment of Wayne Spinks Co. of Memphis, distributor of Norge electric refrigeration, as distributor for eastern Tennessee and northern Mississippi.

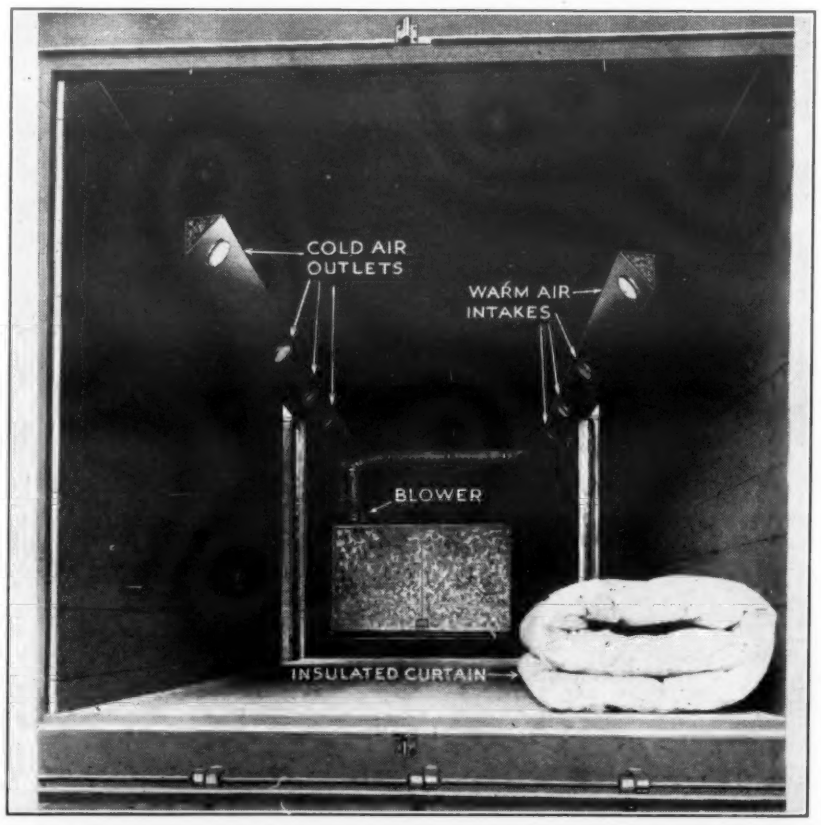
11 Westinghouse Coolers In Harvester Office

MANSFIELD—Westinghouse Electric & Mfg. Co. recently sold 11 MT-8 water coolers to the International Harvester Co. for its offices at Springfield, Ohio.

A Renovated Food Market

Remle's market in Cincinnati was recently equipped with one of the most elaborate installations of refrigerator equipment made recently by Allied Store Utilities Co., manufacturer of Hussmann-Ligonier products.

How Kold-Hold System Operates



Interior of refrigerated truck showing various parts of the forced-convection refrigeration system for trucks which is described in the story in column 4 on this page and was exhibited at the Dairy show.

COMMERCIAL REFRIGERATION

Display Case Helps Buffalo Merchant

Frank Denny, Buffalo food retailer who recently returned to his business, found this Seeger delicatessen case an aid in reviving old trade.

Kelvinator Field Men Study Commercial Products Sales Program

(*Concluded from Page 1, Column 2*)

Harlan, Kelvinator commercial sales manager.

Topics under discussion included air conditioning, automatic heating, liquid cooling, water coolers, bottled beverage cooling, ice cream cabinet merchandising, sales promotion, advertising, service, and general commercial sales policy.

Among the officials who spoke to the group were Mr. Harlan, President G. W. Mason, Vice Presidents H. W. Burritt and H. G. Perkins, A. H. Reinach, manager of distributor commercial sales; Campbell Wood, director of utility sales; R. I. Petrie, domestic sales manager; S. V. Alltmont, manager of liquid cooling division; M. C. Terry, manager of commercial applications division; E. R. Legg, national direct sales manager; E. A. Seibert, service manager; V. C. Woodcox, director of advertising and sales promotion; J. K. Knighton, air-conditioning sales manager; C. Van Maanen, manager of automatic heating division; and John Wyllie, sales manager of Temprite Products Corp.

Reviewing 1933-34 accomplishments in his introductory remarks at first session, Mr. Harlan announced a 37 per cent increase in commercial sales over the previous 12 months. Remaining organization work, he said, will be completed by Jan. 1, and further comprehensive education programs will be begun shortly for each distributor.

A brief address by Vice President Perkins presented the Kelvinator management's comments upon the past year's record and the anticipation of 1935 business. Domestic Sales Manager Petrie reviewed his division's accomplishments, and dealt with the relation of domestic to commercial selling activities.

Supervisory organization, distributor sales, national direct selling activities, public utility work, service, advertising, and sales promotional programs occupied the Tuesday afternoon session. Discussion leaders included Mr. Legg, Mr. Reinach, and Mr. Wood.

Wednesday's meetings covered the air-conditioning, automatic-heating, and liquid-cooling programs, each of the topics being introduced by Mr. Harlan.

Activities of the national direct sales department with regard to Kelvinator's expanded activities were discussed by Mr. Legg. Mr. Reinach outlined the work of the district managers in the air-conditioning field, and details of contemplated selling plans were covered by Mr. Knighton.

Past performance, product plans, inside and field organization, and a review of projected sales activities were the chief subjects in the air-conditioning and liquid-cooling meetings, the discussions led by Messrs. VanMaanen, Alltmont, and Wyllie.

Mr. Woodcox presented sales promotion and advertising plans covering the entire commercial division, and said that Kelvinator's 1934-35 commercial advertising budget will be the largest in the company's history. Leading trade journals and local newspapers will be used to a greater extent than ever before, he said. The meeting was concluded with a discussion of commercial service by Mr. Seibert.

Wednesday evening the men attended an informal dinner at the Lee Plaza hotel, and on Thursday lunched in the new Kelvinator Kitchen, where President Mason and Vice President Burritt gave short talks.

At the conference, the national direct sales divisional managers inspected the new Kelvinator line of ice cream cabinets, being introduced this week at the National Dairies Exposition in Cleveland. Headed by Mr. Legg, these men held a two-day session following the general meeting, then left to attend Dairy show.

Thursday and Friday distributors and utility representatives attended an air-conditioning school conducted by C. L. Toonder of the commercial applications department, Mr. Terry and Mr. Harlan. Kelvinator's line of air conditioners was inspected, and plans for expanded activities in this field were reviewed.

Those at the conference included the following field representatives: District Managers C. L. Barlow, O. F. Boyer, C. R. Brogan, J. L. Conover, L. Klein, L. L. Langley, C. D. Mitchell, F. N. Pattison, H. L. Percy, J. B. Reeves, A. P. Smith, J. B. Taylor, and W. C. Wright; National Direct Sales Managers D. J. Bowen, A. P. Hawkins, H. B. Johnson, E. R. Kelley, A. J. Lutz, R. N. Palm, R. Scheu, and P. B. Toohey; Branch Commercial Sales Managers P. H. Brennan, H. W. Brown, R. A. Day, and Ray Pierce; Public Utility Contact Men R. I. Eshman, J. B. Johnson, S. A. Kelsey, Jack Moore, H. D. Murray, W. C. Stephenson, and G. E. Wagoner.

British Board Reports on 'Drying Effect' in Coolers

LONDON, England—The shorter the time that the small refrigerating machine is inactive, the lower will be the mean humidity in the cooler over the period of the cycle, the greater will be the movement of air, and the greater the drying power and effect, according to a report published recently by the British Food Investigation Board.

It follows that the drying power of the cooler varies with the external temperature.

The extent of this variation was determined. The observations were made on a typical commercial cooler during a period when considerable variation in external temperature was experienced. During this time the cooler was kept empty and the door shut, except for inspection of instruments once or twice a week.

A record was kept of the outside mean temperature, of the temperature inside the box at several points and of the relative humidity of the air in the box and its drying power.

The drying power was found to increase disproportionately with the increased outside temperature, since the movement of air is probably appreciable only during the actual running of the machine.

This arrangement is likely to result in too high a humidity in cold weather, and too low a relative humidity in hot weather.

Display Case Brings Back Grocer's Trade

BUFFALO—Frank Denny, a retail grocer of this city who had sold his store on the payment plan, was recently forced to repossess it, but before he would start operations again he installed a new Seeger full-vision display case for delicatessen and dairy items.

Mr. Denny declared that this modernization step was the only move he could make to recapture his trade. The Seeger-Aker Co., which made the installation, also furnished shelves and display tables of white enamel with black trim, and finished the walls in white enamel with black trim and floor.

The owner declares that since he re-opened his store under his own management, business has increased 40 per cent over his former volume.

Kilbourne Johnston Heads NRA Manufacturing Group

WASHINGTON, D. C.—The National Industrial Recovery Board last week announced the appointment of Kilbourne Johnston as Acting Division Administrator of the Manufacturing Division.

The codes in this division include those covering manufactured materials—forging and casting, structural, fabricated and packaging materials, hardware and metal treating—and manufactured products, such as fabricated products, *furniture and appliances,* sporting goods and novelties, jewelry and musical instruments.

New Low Cost Display Case Spurs Frosted Foods To Open First Big Advertising Campaign

NEW YORK CITY—With the development by the American Radiator Co. of a low-temperature refrigerated display case costing less than $300, Frosted Food Sales Corp. has opened its first intensive newspaper advertising campaign, Syracuse, N. Y., being selected as the city.

Previously, officials of the frosted-foods sales distributing organization point out, distribution of the products were usually limited to one leading retailer in fair sized towns, due to the cost of the equipment.

Frosted Foods Sales Corp. has made another step forward in perfecting a plan whereby local grocery jobbers can handle these cases, where they were formerly supplied from refrigerated warehouses.

Syracuse is the first city where the officials feel that strong enough distribution of the Birdseye products has been gained to permit a first-rate advertising program. About 25 per cent of the principal grocery stores there are selling frosted foods. More than 90 stores were listed in the opening advertisement.

The "out of season" freshness of Birdseye foods is to be featured in the copy. One piece of copy tells about a "surprise" in fresh strawberry shortcake; another tells inland Syracusans that they can now have fish as fresh as though their city was a fishing port. In another piece of copy "a spring dinner in October" is featured.

Other advertising copy points out that "penny for penny, Birdseye foods often cost less than the same so-called 'fresh' foods," and "every ounce you pay for goes right on the table" because these foods have been cleaned and trimmed before weighing. An appeal to housewives, somewhat in the line of electric refrigeration and electric cookery promotion, is in the fact that the time required to prepare the meal is shortened, with most of the preparatory work out of the way.

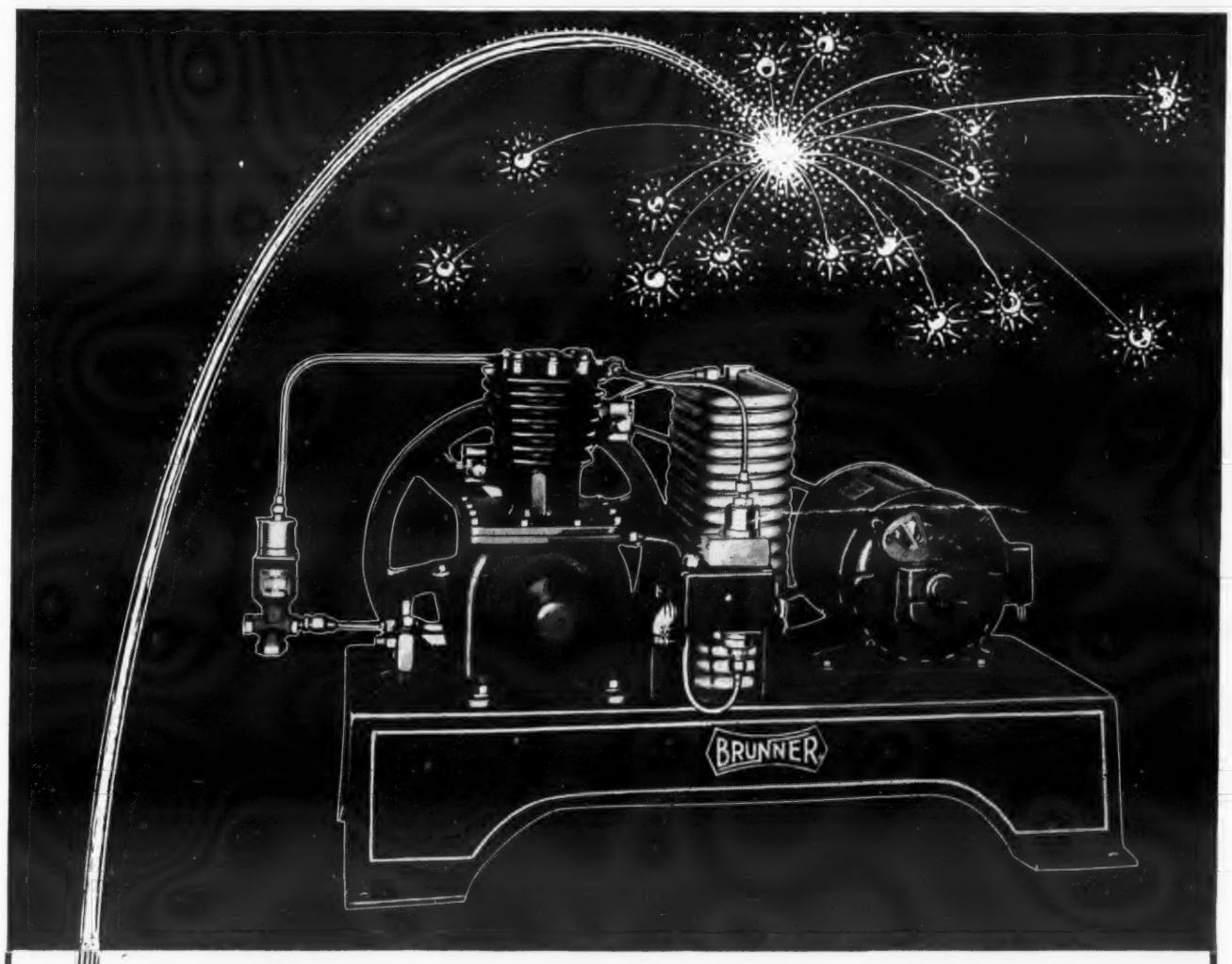
Considerable space has been given to a description of the Birdseye process, attacking the problem by telling what it is not, that is ordinary freezing.

Cooling Tower Firm Is Formed in Kansas City

KANSAS CITY—To manufacture and sell cooling towers for use with water-cooled refrigeration machines, the American Cooling Tower Co. has been organized here with headquarters at 1922 Grand Ave. President is N. Baraban, who also heads the Copeland distributorship in this city.

The product will be sold through commercial refrigeration and air-conditioning distributors throughout the United States. Farm and Home Savings and Loan Association of Kansas City has already installed several of the towers in apartment buildings under its management, it is reported.

Associated with Mr. Baraban in the venture is E. R. Hopkins, inventor of a certain type of fin coil, the president advises.



Fastest Growing Name in the Industry

A reputation founded on Service . . .

Brunner knows that it is an evidence of poor taste for a manufacturer to become too blatant regarding what his product is and what it will do. Yet, it becomes increasingly difficult for us to restrain our enthusiasm and pride in Brunner performance. Brunner is the fastest growing name in the industry. That's a fact! And that its remarkable record is a direct result of service rendered, is equally evident. Perhaps we should say no more. Perhaps you will give Brunner Compressors an opportunity to speak for themselves. If so, we sincerely predict that your words of praise will exceed ours—and, after all, that is the logical source of superlatives—from the user, not the maker of a product. Six dependable compressors. Seventeen efficient highsides. Air or water cooled. Gas engine or electric. 1/6 H.P. to 3 H.P. Full details in the Brunner Catalog, gladly sent upon request. Brunner Manufacturing Co., Utica, N. Y., U. S. A.

Brunner

A NAME BUILT BY 28 YEARS OF SERVICE

COMMERCIAL REFRIGERATION

Westinghouse Finds New Factors In Design of Coca-Cola Cooler

Engineer Explains How Evaporator Was Constructed to Allow for Easy Installation and Removal

R. H. Tull, Refrigeration Engineering Division,
Westinghouse Electric & Mfg. Co., E. Springfield, Mass.

HERMETICALLY sealed refrigerating units, designed to fit a specially built cabinet, are now used in the dispensing of Coca-Cola. The application is interesting since it marks the entry of hermetic equipment into a new field and because of certain features of the design. The application of hermetic equipment is usually limited to domestic refrigerators and water coolers, in which the evaporator and the condensing unit are rigidly mounted close together. This type of construction permits the use of rigid connections between the parts, and complete assembly of the refrigerating unit in its operating position by the manufacturer.

In order to fit a unit into the beverage cooler cabinet to be discussed, the evaporator could be neither close nor rigidly connected to the condensing unit.

Bottles Cooled in Water

The beverage cooler cabinet consists of an insulated tank in which a cold water bath is kept. The bottles of the beverage are set in the water bath and cooled to the desired serving temperature of 38 to 40° F.

The tank is set on legs to give a convenient height and the condensing unit is located under the tank between the legs. The evaporator or cooling coil of the unit sets inside the tank on the bottom.

Tubing connections from the evaporator to the condensing unit are carried up over the edge of the tank and down the back so that the complete unit can easily be removed, as shown in the accompanying illustration.

This type of construction requires a certain amount of flexibility between the evaporator and the condensing unit. The two parts are also separated by several feet. In the design of the unit, these two requirements presented several real problems.

Another problem was encountered in the design of the evaporator itself. The ordinary flooded evaporator did not lend itself to the requirements of this application. An evaporator was required which would be light, would allow free circulation of the water over its surfaces, would uniformly cover the space available, and which would not have to be exactly level for uniform operation.

All these requirements pointed to the use of an evaporator made by bending copper tubing to fit the space. Such an evaporator would normally operate with an expansion valve as a so-called "dry" system. It was necessary in this case, however, to use a high side float valve in order to keep the hermetic feature of the design.

To meet all these requirements, an evaporator was made from copper tubing and the liquid into it was controlled by a high side float valve. By studying a similar system made up of glass tubing, it was found that the operation was very similar to that of an ordinary dry expansion coil.

The location of the float valve presented something of a problem on account of the separation of the evaporator and the condensing unit. Ordinarily the float valve is mounted as close to the evaporator as possible so that the liquid from the float can immediately expand into evaporator.

Location of Float

Location of the float near the evaporator in this case, however, meant putting the float in the tank with the water bath. This location was undesirable for several reasons.

It required space which was needed for bottles. It introduced the warm liquid with its heat into the chamber which was being cooled. It was difficult to provide the firm mounting for the valve which is necessary for proper float action. Also, it exposed the steel shell of the valve to the corrosive effects of water in the tank.

The other possible location for the float valve was on the base with the compressor. This location eliminated the difficulties mentioned above but raised a few new ones. Location of the valve on the base meant that there would be approximately 7 ft. of tubing between the valve and the evaporator.

Usually with this type of construction, as soon as the liquid passed through the valve it would be at low pressure and would tend to boil and absorb heat just as it does in the evaporator.

This evaporation of the liquid in the tube can be eliminated to a large extent, however, if the liquid is not allowed to expand or to absorb heat. The liquid can be kept from expanding at the valve by the use of a tube of small internal area. It can be prevented from absorbing heat by insulating it from warm objects or warm air.

On account of the above considerations, the float valve was mounted on the base alongside the compressor. It was connected to the evaporator coil by a piece of small tubing several feet long. In order to protect this small tubing, and also to insulate it from warm objects it was carried up to the evaporator inside the suction tube.

Thus, the length of small tubing prevented expansion of the liquid until it reached the evaporator, and the cool gas of the suction line, returning from the evaporator, prevented the liquid from absorbing heat. This assembly also simplified the installation of the unit since it was only necessary to carry one tube up over the side of the tank.

As stated above, the cooling coil or evaporator is set in the water bath on the bottom of the tank. The coil is quite flat, barely 3 in. high. The circulation of the water over this coil is possible due to the curious property of water of being heaviest at approximately 39° F.

This means that water which is either colder or warmer than 39° F. will tend to rise in the water bath. The manner in which the bath cools during pull down shows this phenomena very plainly.

When the unit is started with all of the water in the bath at some temperature above 39° F. there is no immediate circulation of the water until the water in contact with the evaporator is cooled below 39° F.

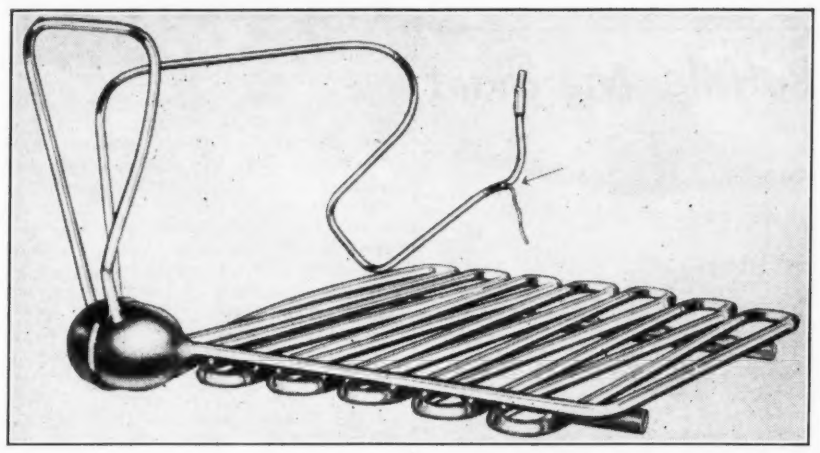
The water cooled below 39° F. being lighter than the surrounding water rises and warmer water takes its place in contact with the evaporator. Thus a circulation is started in the water immediately surrounding the evaporator. Gradually the circulation reaches higher and higher into the bath until the top water is cooled and the entire bath is below 39° F.

The temperature of the bath is held within the desired limits by a narrow differential control set to open at 35° F. and close to 38° F. The control bulb is mounted near the top of the water bath so that the unit will continue to operate until the entire water bath has been pulled down to the shut-off temperature.

When warm bottles are put into the cooler, a part of the water bath is raised to a temperature above 39° F. This water rises to the top of the bath and acts on the control bulb to make the unit operate until the entire bath has been cooled down to the operating temperature of the control.

A considerable number of these units have been built since they were put on the market, and they have given good performance. The economy of operation and the elimination of the care and attention required for iced cooling created a prompt demand for them.

Tube-Within-a-Tube

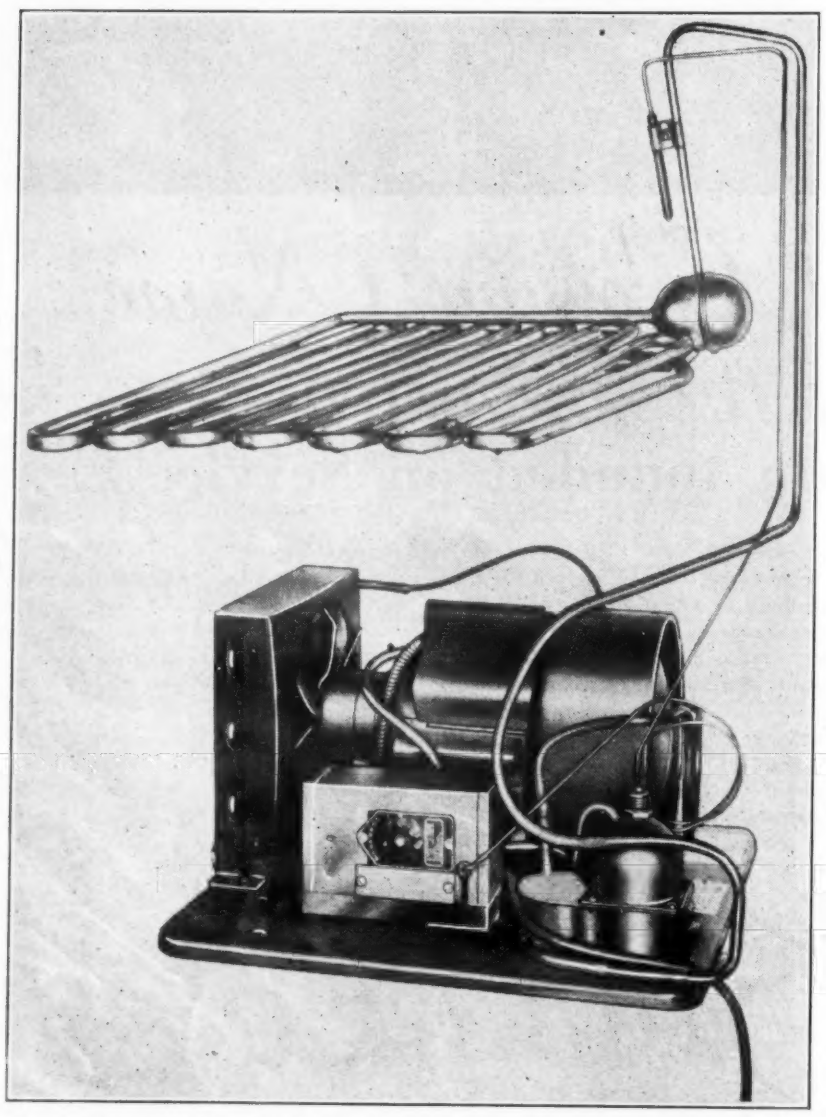


Detail of evaporator coil for Coca-Cola unit. Arrow points to the small tube within the suction line. This small tube leads from the float valve (mounted on the compressor base) to the evaporator.

With Fancy Cabinet

This is an all-enclosed cooler for Coca-Cola dealers.

Complete Unit for Beverage Cooler



Westinghouse refrigerating unit for Coca-Cola cooler showing compactness of hermetic condensing unit and non-rigid construction of evaporator.

G-E, Hotpoint & Victor Equipment Sold to Coker Dairy

HARTSVILLE, S. C.—The Coker Dairy here has been equipped with G-E refrigeration, according to J. R. Freeman, commercial manager for Perry-Browne, Inc., G-E distributor.

Equipment includes a CMF-6W condensing unit, which furnishes refrigeration for the Victor milk cooler cabinet, a Victor sterilizer, a G-E T-7 refrigerator, and a Hotpoint water heater.

The Coker Dairy recently was rated 100 per cent by the U. S. government inspector.

Veteran Beer Seller Buys Brunswick Bar

CHICAGO—Richard J. Jones, long identified in the retailing of beer, wine, and liquors, has installed a special Brunswick Bar fixture and equipment on the premises at 3958 W. North Ave. here.

Beer will be mechanically refrigerated by two under-counter Brunswick instantaneous beer coolers each equipped with two beer faucets and each faucet capable of dispensing 15 gals. of beer per hour. A 1-hp. water-cooled Frigidaire compressor serves both units.

Beer Equipment Mart to Open Permanent Show

NEW YORK CITY—National Beer and Spirits Equipment Mart will open Oct. 22 at 53 East 25th St. here to provide a central and permanent display where jobber, dealer, and dispenser may inspect every product used in the industry.

The mart will maintain an information bureau to supply the trade with data on all types of equipment, and as soon as possible will make available a complete reference library of publications covering beer and spirits.

Educational forum of the mart will provide a series of programs covering: business management, merchandise management, and salesmanship in catering to the public. Authorities in the industry will speak at these meetings and give demonstrations. The program will be free to hotel, restaurant operators, and jobbers.

Kelvinator Develops Four Condensing Units for Trucks

DETROIT—Kelvinator Corp.'s most recent contribution to truck refrigeration includes four light-weight condensing units designed especially for truck use. These units are available in sizes of from ½ to 1½ hp.

Commenting on some of the inquiries that have come to his department recently, M. C. Terry, head of the company's commercial applications department, listed a few of the more elementary principles involved in proper truck refrigeration jobs.

"Numerous problems," he said, "are presented by the fact that space and weight must be kept at a minimum, and also that on certain types of applications some means should be provided for driving the condensing unit while the truck is in operation. The unit must be of the air-cooled type, and adequate ventilation should be provided in the compartment in which it is installed.

Direct Expansion Units

"If the unit is to operate while the truck is on the road, the control must be of a type that is not affected by the motion of the truck, and direct expansion cooling units with expansion valves must also be used."

Mr. Terry outlined two of the more prominent systems of truck refrigeration now in vogue, one primarily for ice cream or other low-temperature work where the truck body and load is to be "pulled down" over night when the truck is in the garage; and another for furnishing refrigeration continuously for long periods.

The cooling unit incorporated in the former, the Kelvinator official explained, consists of a tank containing an expansion coil immersed in a eutectic solution with low freezing point and high latent heat content.

Condensing Units

In installations of this type the condensing unit is customarily built into the truck, but also may be of the "remote" type—fixed permanently on the truck dock and fitted with flexible connections. If the condensing unit in this style of system is allowed to operate until the solution in the tanks has been completely frozen, it is possible to secure hold-over capacity for maintaining low temperatures within the truck body for periods up to 24 hours after the unit is shut off.

One of the most satisfactory methods of driving the condensing unit in installations where refrigeration is required continuously for long periods employs a special constant voltage generator, a special dual voltage motor, and auxiliary electrical equipment. Here the condensing unit speed is not affected by the rate at which the truck moves, owing to the fact that the generator maintains an almost constant voltage throughout its entire range.

Dublin Gets the Largest Display Case in Ireland

DUBLIN, Ireland—A General Electric display counter was recently installed in a food market here. So far as the International Refrigerator Co., Ltd., G-E distributor who installed the unit, is able to ascertain, it is the first display counter to be installed in the city of Dublin and the largest ever installed in Ireland.

How the Unit Is Installed

R. H. Tull, Westinghouse engineer and author of this article, is shown in the foreground, installing a hermetic Coca-Cola refrigeration unit.

AIR CONDITIONING

Oklahoma City Model Home Has Year 'Round Air Conditioning

By S. L. Rolland, Design Engineer, Oklahoma Gas & Electric Co.

ONE of the most interesting air-conditioning installations in this part of the country is in "Aunt Susan's Electrical Home," which was opened to the public Sept. 9, 1934.

This home, located in Nichols Hills, exclusive residential suburb of Oklahoma City, was built by G. A. Nichols, Inc., and was sponsored by the *Daily Oklahoman* and the Oklahoma Gas & Electric Co. It is probably the first in this section to have automatic year-'round air conditioning.

The house is a two-story brick veneer of modified colonial type. The living quarters contain 4,100 sq. ft. of floor space and include, besides the rooms on the first and second floors, a recreation room in the basement.

To keep the capacity and operating costs of the air-conditioning apparatus at a minimum, the building was thoroughly insulated. The exterior walls and the second floor ceiling were insulated with 4 in. of rock wool.

The system was designed to maintain 81° F. dry bulb and 50 per cent relative humidity inside, when the outside temperature is 96° F. with 39.6 per cent relative humidity. This provides an effective temperature of 74° F. inside, under these rather hot outside conditions.

Apparatus consists of a central fan system located in the equipment room in the basement. Fresh air in quantities up to the full capacity of the ventilating plant is brought in through dampered ductwork and mixed with the recirculated air in the rear of the plenum chamber.

Both fresh and recirculated air are drawn into the unit through viscous-type spun glass filters, which remove the dust and dirt. In summer, the air passes through direct-expansion finned-tube-type cooling coils where it is cooled and dehumidified. In winter, the cooling coils are by-passed and the air passes directly into a gas-fired warm air furnace and through a spray-type humidifier.

Distribution Through Wall Outlets

A blower takes the air out of the plenum chamber and forces it through galvanized iron ductwork into the rooms through wall outlets located near the ceiling.

One condensing unit with a rating of 84,000 B.t.u.'s per hour at a suction pressure of 37 lbs. per sq. in. and with condensing water at 85° F. is connected to the cooling coils. The compressor is a vertical, single-acting, high-speed unit, direct-connected to a 7½-hp. motor.

Freon is used as the refrigerant and the evaporator temperature ranges from 28° to 40° F. depending upon the load on the system imposed by different temperature and humidity conditions.

The problem of cooling the condensing water used in the refrigeration machinery was solved by building a spray pond in the back yard which was designed to appear as an ornamental fountain. The spray pond in operation is shown in the picture on this page.

In the process of construction, it was decided that the small room located over the library, and intended for storage purposes, should be redesigned for use as an upstairs sitting room.

Because it was inadvisable to attempt to connect this to the central plant, a ½-hp. self-contained unit was installed. This unit was complete in itself except for electrical, condensing water, and drain connections.

An extensive and inclusive control system makes the installation fully automatic. In fact, all the owner has to do when he moves in is to turn on the system, then forget it, and it will automatically adjust itself to maintain comfort conditions throughout the entire year.

Most important feature of the control system is the automatic change-over switch which permits the change-over from the heating to the ventilating to the cooling cycle of operation and back again in the reverse order without attention.

Frequently in the fall and spring the weather will change quite suddenly, and there are many days when the mornings and evenings are cool enough for heating, while cooling is quite welcome in the middle of the day. These conditions make such a feature an extremely valuable addition to the system.

During the winter cycle of operation the temperature in the residence is controlled by an electric clock-driven thermostat. The clock mechanism serves to raise the temperature setting to the desired day-time control point at any pre-determined hour in the morning and to lower the temperature setting to the desired night-time control point at any pre-determined hour of the evening.

Humidity as Desired

Humidity is controlled by a regulator set as desired by the owner, and it functions to open and close the water valve to the humidity sprays.

During the summer cycle the control of the house is divided into two zones which consist of the east and the west halves of the residence. Temperatures are controlled by two thermostats located one in each zone.

These thermostats function to operate volume control dampers located in the main supply ducts to each zone. Humidity is controlled by means of the same controller used for the winter cycle, which is connected to the refrigeration equipment.

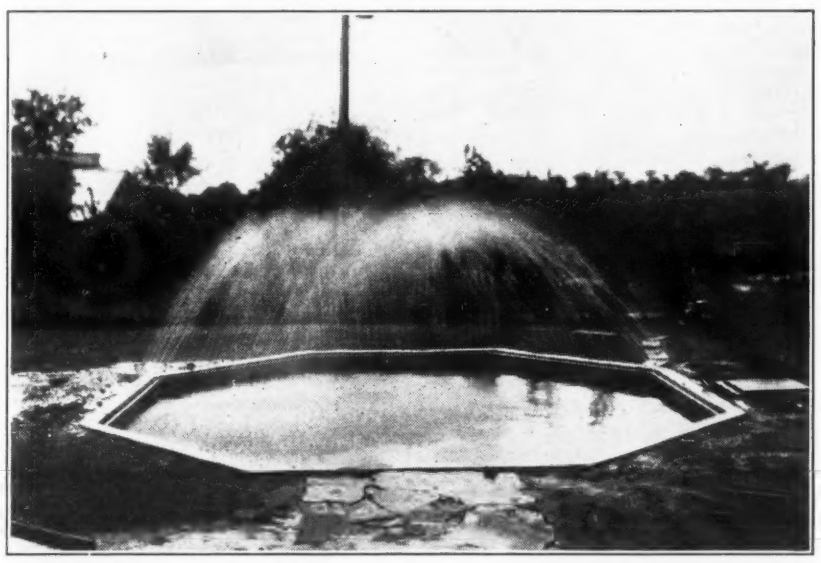
The furnace is provided with the following safety devices: a thermostatic pilot which provides against the failure of the pilot to light, a pyrostat which provides for shutting off the gas should the main burner fail to ignite or should it go out, and a temperature-limiting device providing protection against excessive bonnet temperature.

Saving in the operating costs is effected by automatically introducing 100 per cent outside air at such times as this air is at a temperature suitable for use within the residence, and by causing the refrigeration and heating plants to remain out of operation at such times.

Means are also provided by a toggle switch conveniently located to permit the ventilation of the residence during either summer or winter if the owner desires to do so in order to air the rooms.

While the system has been running such a short time that it is impossible to give any comprehensive data on its operation, the temperatures and humidity conditioning maintained within the house have been quite satisfactory.

Beautified Way to Cool Condensing Water



In the Oklahoma City installation, the problem of cooling the condensing water used for the refrigerating unit was solved by building a spray pond in the back yard.

Steam System Placed In Small Town Cafe

CHENOA, Ill. — Since Williams Oil-O-Matic air-conditioning equipment was installed in Wahls Cafe here early last summer, the establishment's business has jumped 55 per cent, more help has been hired, and the restaurant has gone on a 24-hour operating schedule.

The Williams system, manufactured by Williams Oil-O-Matic Heating Corp. of Bloomington, Ill., comprises three main units, is powered by an oil-burning device, and supplies refrigeration produced by steam.

First part of the conditioner is a steam boiler-burner unit, complete with automatic temperature and safety controls. Second unit contains a chemical (Solvon) absorption refrigeration system, and the third houses hot and cold radiators, a water spray, air washer, and automatic humidifier. The complete system is controlled thermostatically.

Chenoa is a town of only 1,325 population, yet air conditioning has given the cafe such drawing power that on Sundays as many as 2,000 persons are served, the management claims. Amount of the food checks has risen substantially since the system was installed.

Hot water for the kitchen is furnished by the same heating plant which generates steam for the refrigeration system and will heat the building during winter. Use of an oil-burning system was thought appropriate by the proprietors as they operate a filling station in conjunction with the restaurant.

From the middle of July to the middle of August, daily operating cost of the air-conditioning system was $1.82. Williams officials point out that this was at the peak of the Midwest's summer heat wave.

Notes

By John T. Schaefer

Upper Berths

That old friend of the traveler, the upper berth, is again finding popular favor, according to studies recently completed by the Pennsylvania Railroad. The upper had lost ground rapidly to luxurious single rooms, reduced rates for sections, compartments, etc., but air conditioning may help.

Air conditioning, the railroaders declare, has made the upper quite as comfortable as the lower. It gets the same refreshing conditioned air, hence the lower's window is of no particular advantage.

* * *

Antarctic Air Conditioning

Air conditioning has also been getting some publicity from Richard E. Byrd's Antarctic expedition. According to reports, an effort will be made by the explorer to bring back from the frigid zone, some live European penguins in a specially constructed air-conditioned room on the good ship *Jacob Ruppert*. B. F. Sturtevant Co. supplied the air-conditioning equipment for the room.

* * *

Refrigeration by the Sea

Latest experiment of the eminent French engineer and scientist, Prof. Georges Claude, now is on the high seas, bound for Rio de Janeiro. It is a floating powerplant and ice factory, in which Prof. Claude expects to manufacture ice with power obtained from the sea, according to the *Literary Digest*.

The ship *Tunisie* sailed from Dunkirk, France, about three weeks ago. A few hours behind it sailed the steamship *Myson*, carrying a tube which, when its sections are fitted together, will be nearly half a mile long.

This tube will be sunk into the ocean off Rio, the lower end being secured by anchors, the upper end held at the surface by a huge float.

Through it cold water from the ocean depths will be pumped into the ship, to cool the discharge end of a vapor-engine invented by Prof. Claude. The vapor-pressure will be supplied by the warm surface water, evaporated in a large tank from which the air has been partly exhausted.

Thus, without supplying heat from any other source, the French inventor hopes to operate his machinery, taking advantage of the difference in temperature of the lower and upper layers of the water. He expects to manufacture 1,000 tons of ice daily, at a much lower cost than it can be made by ordinary sources of power.

The sea-power vapor-engine scheme has been made to work on small models, and, for a limited time, on a large installation at Matanzas, Cuba, several years ago. The Cuban experiment was abandoned because the long pipe from the ocean bottom was unmanageable; it buckled and broke, and was too costly to replace.

* * *

Diner Apetites

An unanticipated, radical change in eating habits of passengers riding on air-conditioned trains of the Pennsylvania railroad during the heat waves of the past summer is reported by *Business Week*.

"Foods usually associated with cool weather were suddenly in big demand in diners, although temperatures outside the trains ranged from between 90 and 100° F. Sketchy lunches of salads, sandwiches, and iced drinks were crowded out by steak dinners, full course meals, pastries, hot soups, tea, and coffee. The average meal check jumped well ahead of previous summer levels."

WHEREVER refrigerators are sold, the buyer is thoroughly impressed with the importance of rust-prevention, by Bonderizing, under the enamel or lacquer finish.

If, in addition to all of the other superlative features, the salesman can say, "Rust-proofed cabinet," it gives him a clinching argument—a "closer" —a powerful sales weapon.

Bonderizing holds the finish, maintains finer appearance for longer periods, and prevents the spread of rust around scratch or mar.

PARKER RUST-PROOF COMPANY - 2197 EAST MILWAUKEE AVENUE, DETROIT, MICHIGAN

Parker Processes are the result of 18 years of continuous research, looking to improved technic of rust prevention and better finishes for iron and steel products. Literature describing these processes will be sent on request to manfacturers and technical men.

PARKER
RUST-PROOFING
processes
BONDERIZING
PARKERIZING

ELECTRIC REFRIGERATION NEWS

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Price Question Again

PRICE has been out of the headlines in ELECTRIC REFRIGERATION NEWS for a comparatively long time. This, of course, is not by design. It simply means that the industry apparently has not been overly concerned about price this year. In past years, particularly in 1931 and 1932, the most important single topic of discussion wherever refrigeration men met was price. All advertising was centered on price, with figures like $99.50 showing up in foot-high type. Not "how good is it?" but "how little does it cost?" seemed to be the burning question of the hour.

Last year this overemphasis upon price seemed to have faded a bit. This year it has faded considerably. In the Spring it was not at all infrequent or surprising to pick up a magazine or newspaper containing an electric refrigerator advertisement, and fail to find price mentioned therein. To be sure, department stores continued to make special short-period sales, and—according to the invariable department store formula—featured price in their advertising.

Controlled Dumping

Too, distributors in scattered localities did a bit of controlled dumping for their factories. But as a whole, the industry did not seem greatly troubled or concerned over price this season.

Hence, it was somewhat jolting to the editors when they received the following letter last week from an Ohio distributor (who asked that his name not be published):

"After reading your magazine for just about as long as it has been published I had come to the conclusion that you had never missed in an editorial, but your last one about the sudden slump in refrigeration business amused me immensely.

"If the so-called big brains of the refrigerator business cannot figure out the answer to this one, the industry will be better off if they make it a permanent vacation instead of three weeks vacation, to which you attribute this decrease.

Phoney Advance Prices

"The refrigeration business for all manufacturers (now don't ask the manufacturers, ask their jobbers and dealers) has been on the fritz ever since they ran out of 1933 boxes at special prices and had to sell 1934 models at the phoney advance prices instigated at the meeting these big brains had in Detroit, in the heart of the season.

"Why call it a sudden decrease? All manufacturers cut prices tremendously as much as 90 days ago, and found that it did almost no good. The big brains are guilty of going for 23 years with the refrigeration business much in the same class, so far as public acceptance is concerned, as dairy churns for apartment house use, and in the first decent year's business they have had to date they go absolutely crazy, raise the price and ask the people not to buy.

"If prices that were too high are not the answer, then why the cuts all the way across the board? Also why such tremendous business in the spring when everybody was featuring last year's models at a price?

"In our own store we had 216 1933 models to sell in April and sold them in April; in May we had 50 and sold 50; in June we had 30 and sold 30; in July we sold 33, all the specially priced refrigerators instigated by the manufacturers' cut. In August we sold 9. This performance, so far as figures per month is concerned, is direct comparison with every other store in our city.

No More 'Good Ideas'

"Please give this letter to your Traveling Editor, and have him compare it with the experience of other jobbers and dealers; and if I am wrong I will buy the drinks. If there is any way you can have the big brains go on another vacation that will last the next two years, and see to it that they do not meet and have any cooperative movements in that time, this business will take care of itself; but God help us when they get together and have a good idea."

Aside from the facetious references to the industry's executive thinking, this distributor's letter serves to recall attention to the facts that the depression can't be said to be ended yet, that thousands of families are still living on reduced incomes, and that the market for electric refrigerators is to be found more and more among wage earners in the lower brackets. In other words, the price of an electric refrigerator isn't something which can be set arbitrarily, but which must be adjusted most carefully to the buying power of the market to which it is appealing.

Chest Models Not the Answer

Chest models retailing for $77.50—the industry's lowest price for a standard electric refrigerator to date—aren't the answer. Even though they may serve to take care of a portion of the populace which previously had no refrigerator designed expressly for its needs, the fact remains that the vast majority of all families need refrigerators with considerably more storage space than two cubic feet. If prices on five, six, and seven cubic feet boxes aren't adjusted to fit the pocketbooks of this market, it isn't difficult to understand why refrigerators aren't selling today.

Whether or not the distributor whose letter has just been quoted has the right answer for the sudden slump in electric refrigerator sales which hit the industry several weeks ago is open to argument. Undoubtedly the author of the letter is generalizing for the industry on his own particular experience as a local distributor (in only a few chosen spots, for instance, were distributors "featuring last year's models at a price," and not "everybody," as he claims).

The Question Is Worth Studying

However, harassed sales managers might find it useful to go back and restudy their market with a view toward making a possible revision of their price schedules. If, on the other hand, this study reveals that prices are right insofar as being consistent with reasonably profitable operation is concerned, then the salesmanagers can dismiss this solution from their minds and start digging for another means of reopening the market for electric refrigerators.

WHAT OTHERS SAY

Price-Fixing and Advertising

THE American system has been based on the ability and ingenuity of its business men in the development of new and improved products and in the skill with which they have merchandised them. Efficient production methods, coupled with successful salesmanship and large scale advertising, have enabled the advertiser to make satisfactory profits while reducing prices to the consumer. Everybody has benefited, except those who have been unable to keep pace in the competitive race because of poor production methods, lack of ability to improve products or obsolete merchandising technique.

Control of production and price fixing tend to handicap the more alert, enterprising and aggressive competitors. The manufacturer who knows that his output is limited, who is handicapped even in the purchase of machinery which will reduce production costs, in most cases is not disposed to bring out improved products and to advertise them. The system benefits the type of units which free competition might eliminate, to the benefit of the public and business in general.

It is to be hoped that the NRA will proceed to amend codes in those industries where it has been demonstrated that price and production control has failed to work the miracles which it was expected to perform.—*Advertising Age.*, Oct. 13, 1934.

LETTERS

1935 Directory

38 Capital Square
Atlanta, Ga.

Editor:

Will the 1935 DIRECTORY be more complete and up *to date* than the 1934 DIRECTORY? Will every new DIRECTORY contain all that previous Directories have plus the data for the current year? When will your 1935 DIRECTORY be out? If it isn't too long before it is released I will wait until it is out before buying one, as this year has only three more months.

Is the price of the binder alone $3.75, or does that include a year's subscription to the ELECTRIC REFRIGERATION NEWS? It seems that $3.75 would be rather high for a binder.

W. D. HIGHFILL.

Answer:

We hope to issue the 1935 REFRIGERATION DIRECTORY about March 1, 1935, but we cannot state definitely at this time that the book will be completed by that date.

If you are actively engaged in the refrigeration business, we would not advise you to wait for the next book, since the 1934 edition will undoubtedly prove highly valuable and useful to you during the next five months. The 1934 book contains 692 pages. The next one will probably be somewhat larger but it will be necessary to condense some of the information in order to avoid making the volume too bulky.

The price of the binder alone is $3.75. On account of the size of ELECTRIC REFRIGERATION NEWS, the binder is naturally quite large. We sell them practically at cost as a service to subscribers.

We'll Try to Answer

1021 B Ave., Douglas, Ariz.

Editor:

I would like to subscribe for your weekly ELECTRIC REFRIGERATION NEWS but first I would like to know if you will answer a question for me occasionally.

If so, please start the subscription and I will remit upon receipt of first copy.

If you agree to answer a question now and then and wish your subscription in advance, kindly advise me.

J. C. MCCUNNIFF.

Answer:

We are always keenly interested in the questions asked by subscribers since such inquiries are very helpful as indicators of the type of information desired by our readers. However, we get a good many questions which we cannot answer. Therefore, it would hardly be sensible to agree in advance to answer any question a subscriber might ask.

Also, we are sometimes unable to furnish replies to letters as promptly as we would like. Members of our staff are constantly traveling and it frequently happens that letters must be held until a particular member of the staff, best able to furnish the desired information, has returned to his desk.

High Reader Interest

Electric Invisible Kitchen & Bar-ette
1487 Merchandise Mart
Chicago

Editor:

We were always convinced that the ELECTRIC REFRIGERATION NEWS contained information of the highest order to the industry, however, the reader interest and reader dependability of the contents of your paper was never fully realized until the following instant materialized.

In your Sept. 19 issue, Inquiry No. 1849, from a Massachusetts distributor, asking for information, discounts, etc., on our line of kitchens actually materialized into a bona fide telegraphic order, on Sept. 22.

To us this is exceptional, and much credit is due your publication for the intelligent and painstaking way that this inquiry was handled. We are for you 100 per cent.

E. L. BENNETT,
Vice President and Gen. Mgr.

World's Fair Exhibits

David Dasso
Representing Sulzer Bros., Ltd.
Winterthur-Switzerland
New York Office, 50 Church St.

Editor:

I believe that some time during the past year you have published a list of air-conditioning and refrigerating equipment manufacturers who are exhibiting their products at the Chicago World's Fair with a description of the equipment shown. In the affirmative case, I would like very much to obtain the corresponding number of your publication or possibly a photostatic copy of same in the corresponding section.

D. DASSO.

Answer:

A list of air-conditioning displays at the Fair was carried in the June 6 issue of ELECTRIC REFRIGERATION NEWS. Household exhibits were listed in the May 30 issue, and commercial displays were given in the Aug. 15 issue.

You Can Recommend It

Parsons Hardware Co., Inc.
of Manila, P. I.
Export—Import
62-64 William St., New York

Editor:

Because of the interest that one of our clients is showing in refrigerating units for households, we would like your advice if your paper would be of any interest or assistance to an assembler in a foreign country.

Does your paper deal with household refrigerating units? In any event, were you to submit a number for our perusal, it would greatly assist us in recommending your paper to our client.

M. ARANA.

Air-Conditioning News Thoroughly Enjoyed

Carraway Engineering Co., Inc.
Air Conditioning
613 North Pearl St., Dallas, Tex.

Editor:

The ELECTRIC REFRIGERATION NEWS is becoming quite a companion and our interest is naturally aroused by your interest in the air-conditioning field.

We just finished the Sept. 26 issue, which was thoroughly enjoyed.

T. W. CARRAWAY.

Quite a Thrill

May Radio & Refrigeration Corp.
New St. at Morris Ave., Newark

Editor:

It is quite a thrill for me to read ELECTRIC REFRIGERATION NEWS again. I used to read your paper with great interest when I was handling the advertising of Brunswick-Kroeschell Co., New Brunswick, N. J.

C. P. ENGLEBARDT,
Advertising manager.

He Got the Job

3882 S. Arlington
Los Angeles, Calif.

Editor:

I have been a subscriber to ELECTRIC REFRIGERATION NEWS since its inception and have always found the paper helpful and interesting. I well remember that through the medium of it, I secured two executive positions several years ago.

J. T. VARDEN.

News & Directory Help Newcomers

Portable Elevator Mfg. Co.
Bloomington, Ill.

Editor:

As comparative newcomers in the refrigeration game we find both the NEWS and the DIRECTORY to be of very great help to us and we feel that we could not be without either.

P. S. READ.

A Catastrophe

Forest Radio Sales
321 Washington St., Jamestown, N. Y.

Editor:

Due to some reason of which I am unaware I have not received the Sept. 19 issue of the NEWS. Will you send my copy immediately before I have heart failure or something and see that such a catastrophe doesn't occur again. Thank you.

H. F. HUFF.

Back Issues of News

Route 3, Madison, Wis.

Editor:

I would not be without your DIRECTORY and look for the NEWS each week and read it before I read anything else. I am engaged in servicing electric refrigeration and find your articles not only very interesting but very useful.

I would like to know if I can get separate back issues and what the price would be. I would like to get those with service manuals that you have in stock. I would like to get the following issues: March 25, 1931, Aug. 16, 1933, May 30, 1934, June 6, 1934, June 13-20-27, 1934, July 4, 1934, July 11, 1934, Aug. 8-15-22-29, 1934, Sept. 12-19, 1934.

C. L. BADEAUX.

Answer:

Back issues which we have in stock are available at 10 cents per copy.

Here's a Customer

The Starr Co.
Richmond, Ind.

Editor:

Our distributors in New Zealand have cabled us for information regarding lift top type refrigerators.

As you are aware, we do not manufacture refrigerators of this type and it is not our intention to do so.

We will greatly appreciate it if you will please run a news item in ELECTRIC REFRIGERATION NEWS, requesting a manufacturer to get in touch with me to place them in contact with my friends in Australia.

E. RAVINET,
Director, Export Sales.

SERVICE

Service Society Considers Technical Problems

(*Continued from Page 1, Column 1*)

"chapters have been started in five cities—Chicago, Detroit, Milwaukee, St. Louis, and New York." He expressed the hope that 12 more chapters will be organized within the coming year.

Present membership of the society is 329, he said.

Clark Elucidates Savings In Modernizing Systems

First paper on the program was then presented by George Clark of Mercier & Clark, independent service firm of Detroit. Title of the paper was "The Field for Modernization of Obsolete Apartment Equipment."

During the most difficult months of the depression, Mr. Clark said, the income to apartment house managers was greatly reduced so they were inclined to neglect proper maintenance of their refrigeration equipment.

In Detroit this situation is now changed. Two families are no longer living doubled up in one apartment, most apartments are again rented, rents have been raised, and apartment owners are again willing to take proper care of their refrigeration equipment.

In the case of self-contained units, Mr. Clark said, the machines have become noisy—since many are about 10 years old. Also valves and controls need replacement. In some instances, particularly electrified ice boxes, it is more economical to install new equipment than to repair the old.

Service on Multiple Systems

Multiple systems are a frequent cause of service trouble, he said. Many were installed without sufficient compressor capacity, and in hot weather such systems become overloaded especially when various users want a lot of ice cubes. He told of finding installations where the ice-making demands were greater than the refrigeration capacity of the system.

As a remedy to this problem he urges the installation of larger compressors, replacing air-cooled with water-cooled machines.

Water-cooled machines are more efficient, Mr. Clark pointed out, because they operate at lower head pressures—with less carbonization of oil, etc. Moreover, while the capacity of an air-cooled machine is always reduced in hot weather, the capacity of a water-cooled unit is sometimes greater in hot weather because the low sides are operated at higher pressures due to higher refrigerator temperatures.

He then told of striking economies effected by modernization of a 42-apartment building in Detroit for which his company had contracted for complete refrigeration maintenance.

Before modernization, the building was equipped with 12 ¼-hp. air-cooled compressors. These were old and inefficient, and the rest of the system reflected their poor performance.

The service company charged 50 cents per month per apartment for maintenance. This sounds high, Mr. Clark admitted, but it was no bargain because they had so many calls for service.

When permission was secured to modernize the system, the 12 old air-cooled compressors were replaced by two 1½-hp. water-cooled compressors, new valves were put in, and some 800 ft. of new tubing was installed.

By averaging power bills before and after modernization, it was found that a 50 per cent reduction in the operating cost of the refrigeration equipment had been effected.

Service calls have so reduced that the service company is now making a profit with the lowered charge of 25 cents per apartment per month, he said. Calls are now principally on items such as cabinet hardware which have nothing to do with the refrigerating system.

Adding the saving of 25 cents per apartment per month in service costs to a 35-cent saving in current costs, gives a saving to the building owner of 60 cents per apartment per month. This will pay the cost of modernization in a period of about 20 months, Mr. Clark declared.

Riley's Paper Treats Dehydration of Systems

"Dehydration of Refrigerator Assemblies in the Field" was the title of the next paper, written by F. B. Riley of the American Injector Co., Detroit. In the absence of Mr. Riley, the paper was read by G. D. Wang of the W-M Refrigeration Co., Milwaukee.

Extracts from Mr. Riley's paper follow:

There are practically no technical data available on this subject except for scattered papers which treat chiefly with the necessity for dehydration of parts of the refrigeration assemblies before the installation. As a matter of fact, there has not been in very recent years any great difficulty experienced due to moisture in the small domestic or household units which are assembled completely dehydrated at the factory and shipped out as a complete unit.

However, the difficulty with moisture in the field arises from the fact that it is practically impossible to dehydrate completely the various assemblies entering into the completed unit by the usual process of baking and passing of dehydrated air through the tubing and various parts of the system.

Reference is made first to erecting problems and dehydration, and second to servicing problems and dehydration.

With these two divisions there is a further segregation of troubles due to the different refrigerations commonly used in these small commercial installations up to 10 or 15 tons, namely sulphur dioxide, methyl chloride, and Freon (F-12).

Moisture in Systems

Moisture in sulphur dioxide systems usually results in the formation of sulphurous acid, with the metal parts being "stuck up" with a gummy substance. This frequently requires a shut down of the plant.

Methyl chloride has been the cause of frequent servicing operations due to moisture admitted to the system either during the erecting operation, or by oils which have not been sufficiently dehydrated, and less frequently by methyl chloride itself, which, until a comparatively short time ago, contained approximately eight grams of moisture per pound. Analysis of methyl chloride samples now disclose that the standard article is commercially free from moisture and in a usable condition.

Freon (F-12) has presented some difficulties in the field due to other causes than moisture. However, moisture itself apparently causes no serious reaction and the principal difficulty is due to freeze-up in metering valves, or if moisture is in sufficient quantities it may even plug the suction line tube.

Refrigerant Makers Consulted

In preparing this paper, Mr. Riley wrote to producers of the above-named refrigerants in addition to several of the larger and better known chemical plants.

"However, with one or two exceptions the information from manufacturers of refrigerants has been very meager, and they seem to prefer to leave it entirely up to the manufacturers of refrigerating machines as to the best dehydrants to use in the field," he said.

"My excursions among the manufacturers in search of information has yielded nothing which might be called authoritative in this matter. Some prefer one of the dehydrants and some another even with the same refrigerant.

"Therefore, I will only attempt to give what is apparently a digest of the best information which seems to be available at this time, leaving out entirely dehydrating methods in the factory and dealing first only with those units which are assembled on the premises of the user, and second with dehydration of units after servicing operations."

Use of Dehydrators

Taking the refrigerants in order: It has been customary to use dehydrators which consist of a brass or iron tube with suitable capped ends in which S.A.E. fittings have been inserted and filled with flake anhydrous calcium chloride ($CaCl_2$).

Where the calcium chloride is not left in the refrigerant line too long, or until disintegration sets in, this plan works out very satisfactorily for removing a small amount of moisture.

It must be clearly understood that when calcium chloride is saturated to the limit of its capacity, the absorbed moisture will cause the calcium to disintegrate. Finally the divided particles, which resemble extremely fine, moist sand, will find their way into the system and cause as much trouble as the moisture itself would have caused to begin with.

Proper filtering means must be used with calcium chloride to keep the calcium dust from passing into the system.

Calcium chloride should not be permitted to use up more water than is necessary for the formation of the monohydrate. This would give it a theoretical absorbing capacity equal to about 16.2 per cent by weight of the calcium chloride charge. Calcium chloride does not tend to neutralize any acid, if present, in the system.

One or two manufacturers have offered the use of sodium calcium chloride for the reason that this dehydrating agent neutralizes any slight acidity in the sulphur system. However, if acid is present in sufficient quantities, this dehydrant would not relieve a dangerous condition.

Calcium oxide (CaO) appears to be a very satisfactory dehydrant, always, of course, with a suitable filter of asbestos wool, wool-felt, or other wool material, in order to prevent passage of dust through the system. The drying action of the calcium oxide depends on the formation of calcium hydroxide, and this dehydrant has a theoretical water absorption of about 32 per cent by weight.

As a matter of fact, some manufacturers have stated that they were not particularly adverse to having some of the calcium oxide go through into the system as it would seem to be a fair lubricant. However, this would not seem to be the usual practice, and is not recommended as a lubricant.

Activated Alumina

Activated alumina has been used in sulphur systems, apparently with considerable success. However, activated alumina does not adsorb as much moisture as does the calcium oxide, but neither does it disintegrate in the system and on the whole seems to be a very satisfactory dehydrant, but it should not in any event be reactivated and used again.

Methyl chloride presents problems which are more difficult than with Freon. Moisture in the methyl chloride system forms a mild hydrochloric acid, although the action, according to the best authorities, is electrochemical in its nature, whereby metal replaces hydrogen ions in solution, the transfer being attended by a flow of current.

Rapid circulation and concentration of the acid increases the rate of solubility of metals. In the methyl chloride systems, acid-resisting metals, especially in the needles and seats of metering valves, are helpful. However, they are only a temporary relief and are not a cure for this insidious, destructive corrosion, especially in the needle and seats.

Further difficulty has been experienced in the copper plating of the steel parts in which the copper has flaked off and becomes lodged in the suction and discharge valve seats.

The apparent cure for the conditions enumerated here is to place an efficient dehydrator in the liquid line—one which will remove the moisture before there is an opportunity for hydrochloric acid to form. It is probably true that more expansion valves or other metering valves have been ruined by the failure to place these dehydrators in the line than all other destructive conditions combined.

Amount of Moisture Is Problem

All the dehydrants such as calcium chloride, calcium oxide, and activated alumina have been used efficiently, but the danger lies in not knowing just how much moisture there is in the system, or in having a dehydrator with insufficient material in it to take care of the total amount of moisture present.

Calcium oxide has been used very effectively and is low in cost and can easily be replaced, especially in the service man's dehydrator. It should never be reactivated, and a thoroughly dry calcium oxide should always be placed in the dehydrator.

In the larger systems it would be well to install a sufficiently large dehydrator in the liquid line, permitting it to remain in place for a week or 10 days before removing it, to be sure that all moisture is entirely absorbed by the dehydrator.

The only apparent preference for the calcium oxide over activated alumina is in the fact that it has greater absorbing qualities and a much lower cost.

Activated alumina apparently has no disadvantages except cost and its lower absorption possibilities. It has, however, one advantage in that it does not disintegrate in the system. Activated alumina should not be reactivated due to the fact that the pores in this material may become clogged with oil or other matter so that it cannot always be reactivated properly. It is unwise to leave any of the dehydrants in the system after they have reached the limit of their capacity for absorbing water.

Dehydrated methyl alcohol up to 5 per cent by volume has been placed in methyl chloride and Freon systems with the thought of forming a non-freeze mixture. This works out satisfactorily, according to some authorities. However, it does not prevent the formation of hydrochloric acid in the methyl chloride system and with the proper dehydrators the necessity for using an anti-freeze solution is eliminated.

Freon (F-12) seems to be the least troublesome of the refrigerants from the standpoint of moisture, as there is no apparent chemical reaction due to moisture and the only result is a freeze-up in the metering valves. Rather than to put alcohol in the system to prevent a freeze-up, it is better to place in the liquid line a dehydrator with either calcium oxide or activated alumina, or possibly some of the other dehydrants not quite so well known.

These dehydrators will remove moisture, and as before stated, they should be removed from the system after being certain that all moisture has been absorbed or adsorbed.

Use of 'Zinc Moss'

In passing it is well to state that "Zinc Moss," when used in the ordinary dehydrator in place of calcium chloride, calcium oxide, or activated alumina, will prevent the formation of sulphurous acid in a sulphur dioxide system or will neutralize the acid if it has formed, but it has no value as a dehydrating agent.

There will be a resulting increase in head pressures due to a non-condensible gas which will be formed by the action of the sulphurous acid on the "Zinc Moss," but this can easily be purged out through the pressure discharge valve or at a high point in the condenser.

No definite time can be stated in advance as to the actual time required to dehydrate a system. It depends somewhat upon the condition of the dehydrating agent when placed in the system, as oil may retard the absorbing rate very materially, and where one system with considerable moisture may be thoroughly dehydrated in two or three days time, we find that other systems will still contain some moisture after two or three weeks, even with an efficient dehydrator properly installed on the refrigerant line.

Good practice indicates that an over-size dehydrator is merely playing safe, and may save service calls and replacement parts later on.

After reading Mr. Riley's paper, Mr. Wang commented briefly, mentioning that he had had good experience by using a calcium chloride drier first, and then a calcium oxide drier. If you're in a hurry, Mr. Wang said, put a calcium chloride drier in the hot, discharge gas line from compressor.

Thompson Discusses Freon

Refrigerants came into the spotlight next when Mr. Hendrickson read the paper "Facts About Freon" written by R. J. Thompson of Kinetic Chemicals, Inc.

The paper discussed the development of Freon and told about the various characteristics of this new refrigerant which have made it so desirable for air conditioning.

The information in this paper was published in the March 21, 1934, issue of ELECTRIC REFRIGERATION NEWS, so it is not reported more fully here.

Wile Explains Operation Of Expansion Valve

The thermostatic expansion valve, subject for treatment by Dan Wile, research engineer for Detroit Lubricator Co., was described in detail with a full explanation of its operating principles.

Mr. Wile stressed the point which he has made in his previous talks: *The thermostatic expansion valve keeps the coil completely refrigerated.*

Because of the fact that Mr. Wile's explanation of the thermostatic expansion valve has been published

(*Continued on Page 10, Column 1*)

CELOTEX

Cabinet Insulation Maintains Close Dimension Tolerances

READY FABRICATED TO YOUR SPECIFICATIONS

Celotex is a superior cabinet insulation and structural material that wins approval and preference because it offers the manufacturer these positive advantages:

1. *Fabricated at Celotex Mill* to exact length, width and thickness.
2. *Close Dimensions and Thickness Tolerances Maintained.*
3. *Heat-Leaking Cracks and Joints* thus reduced to a minimum.
4. *Inherent Strength* combined with lightness.
5. *Meets High Standards of Insulating Efficiency.*
6. *Sound-Quieting in Unit Compartment.*

Plus These Important Facts—Sterilized, Waterproofed, Odorless, Sanitary. All Celotex Cane Fibre Products are manufactured under the Ferox Process (patented) and therefore effectively resist damage by Fungus Growth, Dry Rot and Termites (White Ants).

We Invite Consultation With Our Refrigeration Specialists

THE CELOTEX COMPANY

919 No. Michigan Avenue Chicago, Illinois

CELOTEX BRAND INSULATING CANE BOARD (Reg. U. S. Pat. Off.)

SERVICE

Commercial Service Problems Studied at Convention

(*Continued from Page 9, Column 5*)

before by ELECTRIC REFRIGERATION NEWS, it will not be repeated here.

He also gave an interesting discussion of the action inside evaporator tubing, bringing out the fact that a refrigerated evaporator usually contains a *mixture* of liquid and gas, not entirely either one or the other.

A considerable proportion of the liquid which passes through an expansion valve is immediately evaporated to cool the liquid itself to the lower temperature of the reduced pressure in the evaporator.

He presented a chart showing graphically that with 80° liquid entering a cooling unit with a 12° evaporation temperature, about 17 per cent *by weight* of the liquid is immediately vaporized.

Considering the same condition *by volume*, this amounts to the entirely different proportion of 2 per cent liquid and 98 per cent gas. This is due simply to the great volume expansion which occurs in evaporation, he showed.

With regard to behavior of refrigerant after it has passed into the evaporator, Mr. Wile explained that if the velocity is high the liquid will be carried along by the gas in the form of mist or spray.

But if the velocity is slow, as it would be in an evaporator with large tubing served by a small compressor, the liquid settles out so the evaporator may be nearly full of liquid. In this case, erratic operation and slugging of liquid through the evaporator may develop.

Mr. Wile then described a number of special applications of the thermostatic expansion valve—a beverage cooler using a sweet water bath, a dry storage bottle cooler, and a new method of attaching evaporator tubing to an ice cream cabinet.

Hamilton Discusses Pressure Losses

C. E. Hamilton's paper discussed the pressure drop of refrigerants through tubing. It was a highly technical paper, replete with fundamental data on refrigeration tubing and capacity of various sizes, much of which has seldom been brought out in refrigeration meetings. Mr. Hamilton is connected with the Utilities Engineering Institute, Chicago.

It should be understood, Mr. Hamilton said at the beginning, that pressure loss is due to the friction of the gas or liquid in the pipes or tubes. The amount of friction, in turn, is affected by the size of the pipe or tubing, the velocity of the flow of the gas or liquid, the discharge and suction pressure in the system, and the kind and condition of the pipe or tubing used in the installation.

"For low pressure refrigerants, copper tubing is almost universally used. Copper tubing is available from most jobbers' stocks in sizes of ⅛, 3/16, ¼, 5/16, ⅜, 7/16, ½, ⅝, and ¾-in. O.D. (outside diameter).

"Flared fittings are available over the same range of sizes. It is not usually deemed advisable to attempt to flare tubing larger than ¾ in., hence flared fitting stops at that point. When larger than ¾-in. copper tubing or pipe is used, soldered fittings are usually employed," he said.

"In the past, jobbers carrying a complete stock of brass fittings have had sizes up to and including 1¼ in. of the soldered type on hand. These jobbers are now increasing their stock to include fittings ranging from ¼ to 2⅛-in. O.D.

"Friction losses increase rapidly with an increase in velocity. There is a limiting velocity with all liquids and fluids beyond which the losses are prohibitive, and to maintain these velocities an unusually high pressure must be maintained," he said.

"On the other hand, it is not always practical to try and reduce the velocity to a minimum because of the increased size of pipes and fittings that must be used, and because the cost of this larger pipe or tubing might not warrant the gain in reduced friction losses."

Mr. Hamilton then gave a number of mathematical formulae for computing the pressure drop through a given size and length of tubing. He also gave a table of velocities possible through tubing with various common refrigerants.

"Pipe friction and pressure drop of refrigerants is not of much importance in a short run. Chiefly, it enters the picture in a long run and especially if a good portion of this run is vertical. Also, the friction losses are not of as great importance with liquid as with vapors. The chief reasons for keeping down the velocity on the discharge side is to prevent pounding in the tubing, wire drawing in the valve, and to reduce the head pressure required to maintain the velocity," he stated.

The speaker said that on the suction side of the system, a minimum velocity of approximately 1,000 ft. per minute should be maintained to insure the proper return of oil to the compressor.

"The design and style of the evaporator affects the velocity in the low side of the system to a certain extent. The velocity at the outlet of the evaporator coil is usually maintained at approximately 2,000 ft. per minute.

"After the refrigerant passes through the refrigerant control, the velocity gradually increases until the refrigerant reaches the outlet of the coil."

This, he explained, is due to absorption of heat by the liquid refrigerant and the forming of vapor as the liquid boils.

"With a velocity of 2,000 ft. per minute at the outlet, the average velocity throughout the coil will be approximately 1,000 ft. per minute. It has been found that the drop in pressure may be as much as four to five inches of mercury from one end of the coil to the other."

In closing, Hamilton gave some facts about tubing sizes that have proven practical by application in the field.

"In household domestic use, use a ¼-in. liquid line, a ⅜-in. suction line up to 50 ft. with a ⅛-hp. condensing unit; a ½-in. suction line up to 50 ft. with a 1-hp. condensing unit; and a ¾-in. suction line up to 50 ft. with a 2 to 2½-hp. unit are common," he said.

"In a multiple apartment installation, a ½-in. line may be run up to six, seven, or eight floors. Two ½-in. suction lines may be run parallel for a greater distance than 50 ft., or a ⅝-in. suction line may be employed. This will take up to a 3-hp. job. If brine lines are used, never use less than ¾-in. pipe," he concluded.

Askin Discusses Types of Commercial Low Sides

"Commercial Low Sides" were next discussed by Joe Askin, chief engineer of the Fedders Mfg. Co., Buffalo.

Mr. Askin reviewed the various types of commercial low sides, starting with the early designs and describing others in the order in which they were introduced to the refrigeration industry.

He first told about the early brine tanks—built in semblance of the blocks of ice which they replaced. They were iron tanks, containing copper expansion coils. They were bulky affairs, and used for large refrigerators.

To hold a refrigerator temperature of 40° F., the brine was kept at about 20° F., with an expansion valve set for 10° F.

Next development was the low-side float, flooded evaporator. This had the added feature of freezing ice cubes, and was designed for smaller systems.

The cross-fin flooded-type coil for commercial applications not requiring ice cubes was the next step.

Another is the low-side float, flooded coil with a brine or alcohol tank for ice cream cabinets or soda fountains. This type has a Stellite float valve needle, and a stainless steel seat. The float is of the ball type.

Then Mr. Askin described the dry expansion coils using a thermostatic expansion valve. These are applicable to cooling of water, milk, or beer, and are frequently used in a sweet water bath.

Non-frost fin evaporators—one of Fedders' newest developments—were then discussed. In these, ice formed on the coils during the operating period melts off during the off-cycle. They have an added advantage in increased humidity, he said. In this type the cut-in pressure of the machine must correspond to a temperature greater than 32° F. for the refrigerant used, he pointed out.

These are also being used in low-temperature work, he said, but here the coils accumulate frost which must be removed occasionally by shutting down the machine.

The speaker next told of refrigerated truck cooling units. These are of several designs; some consisting of a brine tank with a coil into which ammonia from a stationary plant is expanded at night to cool the brine, others being direct expansion from a sulphur dioxide or methyl chloride refrigeration unit carried on the truck. Barium sulphate was mentioned as an eutectic brine solution.

Another type touched by Mr. Askin is the flat-plate coil used to lay baskets of vegetables, etc. on. These may be placed in a sweet water bath, if it is desirable to build up an ice reserve.

Ice cube makers, recently in some demand for liquor service, may be of the flooded type, or they may use thermostatic expansion valves.

Several layouts for installation of forced-draft unit coolers were next shown on the screen, and the advantages of this type of cooling unit were enumerated.

Mr. Askin then described the "sandwich type" of beer-cooling unit in which beer coils are wound together and in intimate contact with refrigerant coils.

Finally, he discussed air-conditioning cooling coils, telling some of the development work done by his company in this field, and predicting that refrigeration manufacturers using low-pressure refrigerants will soon extend their machines well above the present 20-hp. maximum in one machine.

Cook Plans Standard Cost Forms

"Accounting Systems for Service Organizations" was the subject of J. B. Cook who is making a survey of refrigeration service methods and costs in order to prepare a standard set of forms for service companies.

Requisites of such a system—which Mr. Cook plans to incorporate into his new one—are flexibility, simplicity, and efficiency. Moreover, he said, it should be a time saver.

He estimated that not over 50 per cent of a service man's time is spent in actual productive work on the customer's premises.

The minimum charge, usually made by a service company for even minor adjustments, is too low at $2, in the opinion of the speaker.

When his survey is completed, Mr. Cook expects to have five standardized forms, in addition to the regular ledger, journal, cash book, etc. These will be (1) a work order, (2) sales and cost sheet, (3) expense distribution, (4) order summary, and (5) financial statement.

Jacobsen Gives Tips on Ice Cream Cabinets

"Ice Cream Cabinet Service" was discussed next by P. Jacobsen of the Dependable Refrigeration Service Co., Chicago.

The first ice cream cabinets to be used extensively were those of Nizer Corp., Mr. Jacobsen recalled. These were self-contained, water-cooled units.

"The actual field service on ice cream cabinets is no more difficult than on household refrigerators," he said, "but it requires a more thorough knowledge on the part of the service man, as ice cream is a very perishable product."

When the temperature goes down to 12° F., the ice cream becomes soft and mushy, and if cooled down again it loses its smooth texture and becomes gritty and unpalatable. Thus it behooves a service man to be able to correct troubles promptly.

Of utmost importance, the speaker declared, is the necessity for proper installation practices. Recommendations for correct installation methods made by him were:

An installation should be made so that it is readily accessible for service.

An air-cooled machine should be placed where cool, clean air can circulate through the condenser. If cool air is not available where the machine is to be installed, it is better to use a water-cooled machine.

The copper tubing used on the job should be run in a workman-like way, with soft bends where necessary, and on the straight runs the tubing should be kept straight sloping slightly towards the machine to provide proper oil return.

Scale traps should be installed on the line to prevent dirt from getting into the cabinet or the machine.

Proper shut-off valves should be installed where there is more than one cooling unit connected to the machine so that each and every unit may be shut off individually.

A switch box with fuses should be placed near the machine so that if anything goes wrong it may be readily shut down.

The cabinet should be placed level. If it is a brine tank cabinet, it should be filled with the recommended solution to a level above the cooling unit inside the cabinet.

When the installation has been made and the machine started it is advisable to purge the machine after about 15 minutes of operation, to remove any non-condensible gases.

Check the machine for operation, gas leaks, and pumping capacity, see that the motor is oiled properly, and check back on the job the following day to adjust controls and give final going over.

Mr. Jacobsen also urged a regular field inspection of ice cream cabinet installations. This will result in a longer life of the equipment. It should include, he said, the following inspection operations:

1. Keeping the machine—especially the condensers on either air or water-cooled machines—*clean* so that they may work to their full capacity. Dust in an air-cooled condenser and dirt in the strainer of a water-cooled machine cut down the capacity of the machines very rapidly.

2. Oiling the motor bearings. Properly oiled motor bearings will last from 8 to 10 years. Improperly oiled bearings from 6 months to 2 years.

3. Keeping the belt tight to get longer life out of it and also better traction—which in turn means less running time for the machine.

4. Checking the amount of gas in the system. Almost all ice cream cabinets lose a little gas all the time. It may be so little that it is hard to find the leaks but sooner or later some gas must be added to the machine, and inspection service will tell you when this is necessary.

5. Checking operation of all the valves. It is not often that a valve goes bad all at once, it first becomes inefficient, and if allowed to keep operating it will give out some day. Have it repaired or exchanged on this inspection service and keep the machine up to capacity.

6. Purging the machine for non-condensible gases which may accumulate from time to time, to prevent these gases from building up undue high pressures on the machine.

7. Checking strainers and scale traps so that they will not clog up and such cut down the capacity of the machine.

8. Checking motor brushes and commutator so that they will not give trouble during the starting periods of the machine.

9. Checking the fuses in the fuse box. They may have been changed to a heavier fuse which would be no protection for the motor.

10. Checking the oil level in the compressor so it will not run dry due to shifting of oil from the crankcase to the receiver or cooling unit.

11. Making whatever changes desired in control adjustments to suit the season and the customer's needs.

12. Preventing deterioration of the machine and cabinet from rust and corrosion. (A little paint works wonders.)

13. Checking the brine level so that no undue evaporation takes place, also checking the consistency of the brine to determine that the solution is not too weak and does not run a danger of freezing.

In conclusion, Mr. Jacobsen cited three conditions which may cause a service call: Power failure—blown fuse, no current or switch shut-off. Gas leak—tubing split, worn, or seal worn. Control adjustment — quick changes in weather conditions or sales may necessitate control adjustments.

Air-Conditioning Controls Explained by Miller

L. B. Miller, sales manager of the Minneapolis-Honeywell Regulator Co., was the next speaker, treating the subject of air-conditioning controls.

When engineers began to study the requirements for air-conditioning controls, Mr. Miller related, they were faced with a new problem of controlling cooling and humidity in the summer, and heating and humidity in the winter.

This problem did not appear to lend itself to solution by the simple two-position "on-and-off" switch, the speaker went on, but with the additional factors to be controlled it appeared that a modulating or proportioning system was necessary which would have a gradual action with intermediary points between "on" and "off" positions.

Believing this to be true, Minneapolis-Honeywell engineers designed their new modulating or balancing control. It uses a modification of the "Wheatstone Bridge" electrical circuit.

The control can be installed to take cognizance of outdoor dry-bulb temperature and indoor relative humidity in dictating the inside temperature produced by refrigerating equipment in summer.

Mr. Miller displayed a large A.S.H.V.E. effective comfort chart, telling the convention delegates how it had been developed, and explaining its application.

The new control can be built to produce conditions within the comfort zone, and also can be used to regulate inside temperatures in summer so as to avoid the "shock" which sometimes occurs to the human body when the indoor-outdoor temperature differential is too great.

He also pointed out that refrigeration is used to remove both sensible and latent heat, and reasoned that since latent heat must be taken out at much lower suction pressures (and consequently at reduced compressor efficiency) it is best to remove the sensible heat first—at favorable suction pressures—and then take out the latent heat separately.

Stark Demonstrates Domestic Controls

"Domestic Refrigerator Controls" was the title of W. Stark's talk before the service men. Mr. Stark is a sales engineer for Cutler-Hammer, Inc., and maintains headquarters in Detroit.

He had several demonstration models with him, and after describing the various types of household controls, demonstrated their features and showed what adjustments can be made.

Downs Urges Quality Work at Good Price

"Estimating Repairs and Installations" was considered in the next talk by J. H. Downs of the Downs Refrigeration Service, Detroit. Mr. Downs emphasized first the variability of the time element in trying to predict costs of repairing refrigeration installations.

Frequently there are so many connections to be made that it is hard to come very close on estimating, especially if the installation is one with which the service man is not familiar.

When you have made an estimate of the time required, add 50 per cent for jobs which will require over two hour's work, and 100 per cent for jobs of less than two hours, he suggested.

Mr. Downs doesn't approve of sal-

(*Concluded on Page 11, Column 1*)

Just after the Big Show Opened in Philadelphia

Scene of the recent Electric and Radio Show, sponsored by the Electrical Association of Philadelphia, and attended by nearly 150,000 people. Judson C. Burns booths pictured here display General Electric products.

Charges for Service Studied by Society

(*Concluded from Page 10, Column 5*)

vaging odd pieces of tubing which have been taken out of a serviced installation. Always use new, clean tubing on a job, and good packless service valves.

"Sell quality work and get your price for it," he urged. "Then stand behind your work."

He remarked that he would much rather have his customers say "If you want a good job done, go to Downs," than to say "If you want a cheap job done, go to Downs, but for goodness sake, watch him!"

Busby Recommends Rate of $2 an Hour

Harry Busby of the Harby Refrigeration Service, Chicago, spoke next on the subject "Determining the Rate of Service Charges."

"To determine a charge, one must first estimate the cost of making a call. Although this is difficult because of varying conditions, there are a few known facts which can be applied with simple arithmetic which will give a fair charge," he said.

Transportation is usually provided by a Ford or similar car whose original cost is about $600 and whose life is about four years, or 60,000 miles. This, he showed, makes an average yearly depreciation of $150.

Transportation Costs

Assuming the insurance to be $50 a year, licenses $18 per year, and the average operating cost to be two cents a mile (covering gas, oil, tires, and repairs) the yearly operating cost will be $300 (15,000 miles times two cents).

Then adding them all, one gets a total cost of $518 per year, which, divided by the working hours, gives a transportation cost of 22 cents per hour, he explained.

By paying a service man a minimum of 75 cents per hour, and figuring that not over 70 per cent of his time is actually productive time spent on a customer's premises, it costs $1.07 for his productive time.

Since about 18 per cent of his time is spent in call-backs, or repeat calls on which there is no revenue, the cost is brought up to $1.30 an hour.

Figuring a 25 per cent overhead, the cost per hour including that item is raised to $1.73. Then adding the 22-cent per hour transportation cost, you arrive at a cost of $1.95 per hour. Two dollars an hour is certainly not too high to charge a customer, Mr. Busby asserted.

He then recommended a sliding rate of charge, with a minimum charge of $2 for calls up to one-half hour, $1 for the next half-hour, and $2 each for additional hours.

Hoesel Discusses Fin Coil Evaporators

Fin coil evaporators were next discussed by A. F. Hoesel of the Peerless Ice Machine Co., Chicago.

He first stressed the fact that the smaller the temperature difference between refrigerator and evaporator, the greater the efficiency of a compressor because it then works on the most favorable (highest possible) back pressure. This has been considerably improved by use of fin coils, he showed.

Advocates Heat Exchangers

Mr. Hoesel is a strong advocate of heat exchangers between suction and liquid lines to increase a system's efficiency. These should not only be large enough to eliminate moisture condensation on the suction line, he declared, but should materially decrease the temperature of liquid entering the evaporator so that it does not vaporize too quickly on passage into the low side.

"A large amount of vapor is generated at the expansion valve when heat exchangers are not used. This greatly increases the velocity of the gas so that it tends to carry liquid through to the outlet of the coil," he said.

This supersaturated gas coming through the coil has a much smaller capacity for absorbing heat than dry gas, he indicated, and reduces the efficiency of a system.

With respect to materials for use in commercial coils, Mr. Hoesel pointed out that copper fins and copper tubes have been widely used, just as have aluminum fins and copper tubes.

Copper had previously been favored almost universally for heat transfer work, probably because copper can be soldered to make a good bond, while aluminum ordinarily cannot. Mr. Hoesel's conclusion is that there is little difference for heat loads of small refrigerating systems.

Experiment with Spiral Coils

It is an accepted fact, Mr. Hoesel asserted next, that best efficiency of a refrigeration coil is obtained when its internal surfaces are wetted. This condition is usually difficult to attain in long series coils.

However, he said his company is experimenting with spiral coils in which centrifugal force will be utilized to keep the liquid adjacent to the internal diameter of the coil.

Following his talk, Mr. Hoesel was asked what heat exchanger he recommends. He replied that he favors no special kind, just so it has sufficient transfer surface.

Another question was, "Where should a thermostatic expansion valve be placed, at the top or bottom of the coil." He replied that it doesn't make much difference, in his opinion.

Bataille Discusses New Air-Conditioning Coils

G. S. Bataille, sales manager for the Rempe Co., Chicago, then made a few impromptu remarks about trends in air-conditioning coils.

He first showed a spiral fin coil, which, he said, is being accepted for air conditioning. These have short fins, close together which, he declares, is a very satisfactory combination for air-conditioning coils.

Being closer to the primary surface of the tubing, a short fin provides better heat transfer to the tubing. And due to the fact that there is little danger of freezing up between fins of air-conditioning coils (because they usually operate at temperatures above 32° F.) it is feasible to place the fins close together.

Some of the large manufacturers of air-conditioning systems have designed all-steel (steel fins and steel tubing) coils for air conditioning, Mr. Bataille reported, and in his opinion the trend in air conditioning is toward all-steel or all-copper coils.

He urged the service men to measure the pressure drop through an air-conditioning coil as one of the first steps in service. It is not unlikely that an installation may have too great a drop across the coil, as a good many installations have been made, in the speaker's opinion, in which the tubing is too small.

Mr. Bataille also expressed the opinion that air-conditioning coils should be operated in a flooded condition—in order to get the best heat transfer.

He favors a high-side float over the low-side float for this work, citing the extensive and eminently satisfactory application by the Commonwealth Edison Co. of the high-side float control. A low-side float is apt to be unsatisfactory because there is much boiling and turbulence of the refrigerant in air-conditioning coils, and this might interfere with proper operation of a low-side float.

Brand Gives Properties Of Lubrication Oils

Final speaker of the convention was E. E. Brand, Chicago manager of L. Sonneborn Sons, Inc., supplier of refrigeration oils. Mr. Brand's subject was "Lubrication of Mechanical Refrigerators."

There are two main requirements of a refrigerating oil, he said. These are (1) it must lubricate properly, and (2) it must have no bad effects on operation of the system.

There are two types of oil in common use in small systems, he explained, pale oil of "canary" color and white mineral oil. Both fulfill the lubrication requirement if the proper body is selected—there are 15 or 20 different weights available.

A leading service difficulty with oils is that they form gummy sludges in certain reactions with refrigerants. Sulphurous acid—formed by a small amount of water entering a sulphur dioxide system—will do this, he said.

There is a very simple method of determining whether or not an oil will sludge, Mr. Brand said. This is to boil it with sulphuric acid (H_2SO_4) to see if it forms a sludge.

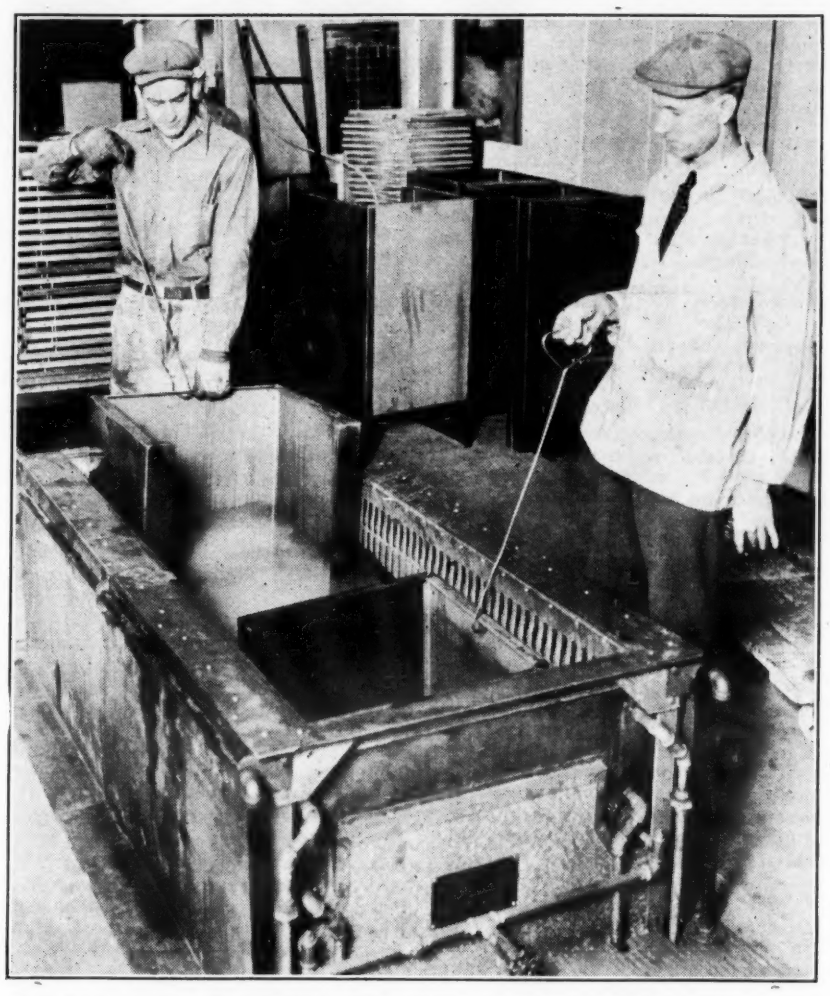
A light, medium oil is usually satisfactory for household machines, he indicated. About 150 viscosity was suggested, although, he admitted one large manufacturer (Frigidaire) uses an oil of 75 viscosity in household machines.

A light oil can be used only when the refrigerant is not very soluble in oil. After a machine has been in service for some time, Mr. Brand stated, it is frequently advisable to use a heavy or medium heavy oil of about 300 viscosity.

New Officers

Officers elected for the coming year are: T. J. Fowler, Chicago, president; J. H. Downs, Detroit, first vice president; G. D. Wang, Milwaukee, second vice president; E. J. Merenda, New York City, treasurer; and H. T. McDermott, Chicago, secretary.

Chemical Used to Clean Metal



Chemical vapor degreasing tank which cleans and dries metal for Crosley refrigerators in one process.

General Electric Lists Things Workshop Will Do

CLEVELAND—New General Electric workshop has varied home and professional uses. Illustrations of what it will do are listed as follows:

Saw wood—cross-cut or rip—up to 1¾ in. thick, at any desired angle or bevel.

Turn wood with a limit of 9 in. diameter for face-plate work.

Take lengths of 30 in. between centers.

Readily turn brass and aluminum.

Sand flat surfaces and contours.

Scroll work on wood up to 2 in. thick.

Scroll work on metals including sheet iron.

Drill both wood and metal.

Make mortises and tenons.

Drill accurately-placed dowel holes.

Cut rabbets and grooves.

Grind and buff.

Supplementary attachments may be built by means of the workshop itself. Improvised jigs for quantity production of small parts can be mounted on the sanding table or held in the attachment clamp.

The machine, including all attachments, necessary tools and steel cabinet to support it, is packed in a box about a foot square and 38 in. long. Ready for use it occupies a floor space, 18 in. by 38 in.

All parts are proportioned to withstand the maximum stresses to which they are likely to be subjected.

The motor has a ¾-in. shaft stepped down to ⅝ at the bearings.

The workshop will be merchandised through the distributor-dealer organization of G-E's specialty appliance sales department. Price of the unit is $99.50 f.o.b. factory.

Detroit Engineers Will Meet Oct. 26

DETROIT—Detroit Engineering Society will open its 1934-35 season at 8 p. m. Friday, Oct. 26, with a smoker in the small banquet hall of Hotel Statler. The meeting will be open to all interested engineers.

Principal speaker at the affair will be Dr. C. F. Hirshfeld, the Detroit Edison Co.'s chief of research, his subject being "The Engineer Today and Tomorrow." Special dinner will be served before the meeting for those who wish it.

G-M Booklet Links Research & Industry

DETROIT—"I cannot help but feel that in a very short time we are going to break loose another great piece of basic information which will keep us industrially busy for a great many years to come," declares Charles F. Kettering, General Motors vice president in charge of research, in the foreward of a review of the effects of research on automobile development, just published by General Motors Research Division.

According to this booklet entitled "Research—An Eye to the Future," guesswork on automobiles has been largely eliminated by three types of research. One is the laboratory research work of the engineers; another is the practical testing of the product at the proving ground; and third is the systematic questioning of car owners as to their needs and desires, known as customer research.

"Back in the early days of the twentieth century, industry and research lived on opposite sides of the street," says the booklet. "Each one had, in a sense, what the other lacked. Industry had aggressiveness — the ability to make things and sell them. Research had imagination, curiosity, and patience. Both knew the meaning of hard work.

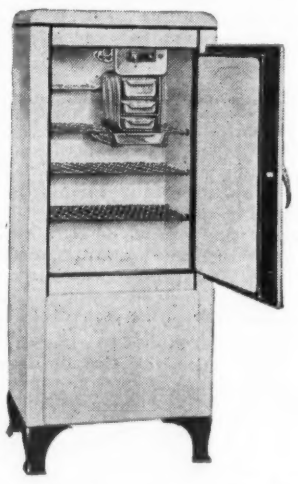
"For a long time, they had managed to get along quite well separately. The things industry made weren't very complicated. It required no particular knowledge of science to build a buggy or a bicycle. And the things that the research discovered weren't especially intended to be practical.

"But the automobile made a tremendous change in the situation. It raised endless problems of chemistry, physics, and electricity, which research had never tried to answer, and which had to be answered if people were to find satisfaction in the auto.

"So industry said to research: 'Why don't we form a new partnership? You can find the answer to my questions before I ask them—I can take the things you discover and spread their benefits all over America.'

"As a result, industrial research took the crude, unreliable automobile of 30 years ago, and made it so dependable, so easy to operate, so economical to build and buy, that America today owns more automobiles than all the rest of the world combined."

The fact that greater employment is one of the fruits of research is demonstrated in the booklet.



● Customers like the simple beauty of the Copeland, and the scientific arrangement of the shelves.

New Copeland

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(DU PONT METHYL CHLORIDE)

For Dependable Refrigeration

Because it provides dependable refrigeration, ARTIC* has been used as a refrigerant by the Copeland Refrigeration Corp., Mount Clemens, Mich., for more than 5 years. And dependable refrigeration is one of the selling points used by the Copeland company in its 1934 campaign.

"Customers," says Copeland, "are pleased with the efficient performance and quiet operation of the condensing unit." Other features of the new Copeland which appeal to customers are the scientific arrangement of shelving to accommodate food of every type and shape, the simple beauty of the cabinet, and the reasonable prices at which Copelands can be bought. The company adds that its distributors find it easy to sell the new Copeland Household line.

The complete Copeland line comprises 7 household models, in Porcelain and Porceloid finishes, and 21 commercial condensing units, providing refrigeration for any purpose.

The Copeland household refrigerator displayed to vacationists on the Boardwalk, Atlantic City, N. J.

ARTIC* has steadily increased in prominence as a refrigerant since it was first introduced in 1920. Today, 9 out of 30 manufacturers of household units and 22 out of 28 manufacturers of commercial units use it as a refrigerant for all or part of their line. It provides efficient, dependable refrigeration.

Manufacturing Engineers: Write for 56-page technical book giving complete physical and thermodynamic information on ARTIC.

Service Engineers: Write for new Service Manual on ARTIC, giving Service Aids.

*ARTIC is the registered trade-mark name of Du Pont for its Methyl Chloride (99.5% pure) especially manufactured for refrigeration purposes. Low in moisture and acid contents.

DU PONT *R&H Chemicals*

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ANSUL METHYL CHLORIDE is available in any quantity, spot or contract shipments. Every container is laboratory tested to insure low moisture and acid content.

ANSUL CHEMICAL COMPANY

MARINETTE - - WISCONSIN

SERVICE

Service Helps on Holmes Unit And Its Accessory Parts

Second Article on the Holmes Ethyl Chloride Machine Explaining Charging, Location of Leaks, Etc.

GIVING detailed instructions on removal of various component parts of the Holmes household refrigerating unit for service purposes, the following article is the second in a series of three on Holmes service. Last week's issue of the NEWS gave an illustrated description of the machine, written especially for service men, while next week's issue will present a thorough diagnosis of the various troubles common with the Holmes machine, with their remedies. The last article will be replete with practical service suggestions for the Holmes unit, and will be the most valuable of the three instalments.

For the complete over-all picture of how to service Holmes refrigerators, service men are urged to use all three articles together.

The Holmes refrigerator, it will be recalled, was manufactured by Holmes Products, Inc., with offices in New York City. Before production of the machines was discontinued they were merchandised nationally, consequently there are many Holmes machines in service today on which service is still required.

Removal of Operating Unit

Stop machine by moving the lever on "Sentinel" breaker to the "Off" position. Disconnect Hubbell plug from receptacle located in the unit leg. Disconnect the ⅛-in. copper tubing liquid line from the bottom of the float housing and immediately insert plug in tubing nut.

Disconnect ⅜-in. copper tubing suction line from check valve. Place a blind nut on this check valve connection at once.

A small amount of oil and ethyl chloride will flow from these connections when they are open. Place a cloth under them to prevent the oil from running on to the bottom of the machine or on the floor. The unit can now be removed from the base of the refrigerator.

Installation of Unit

Remove the oil plug in compressor dome and check the oil level. Compressor should be filled with oil up to the level of this oil plug. Replace the cap using new lead gasket and draw up tight. Place unit in proper position in machine compartment.

Make sure that it rests squarely upon the three rubber pads. Connect ⅛-in. copper tubing liquid line to fitting at the bottom of the float housing. Remove the blind nut from the ⅜-in. connection on check valve. Connect the ⅜-in. copper tubing suction line to check valve.

Insert the Hubbell plug in its receptacle on the unit leg. Attach pressure gauge, and vacuum gauge, as described in last week's issue of the NEWS. Open purge cock on float housing.

Start machine by moving lever on "Sentinel" breaker to the "On" position. Close purge cock after 10 to 15 seconds of operation. Watch pressure gauge to determine if all air is out of the system.

Removing Float Valve

Stop machine by moving lever on "Sentinel" breaker to the "Off" position. Open purge cock on the float housing. This will relieve the pressure on the condenser and the float housing.

Place sufficient cloths beneath float valve to prevent ethyl chloride and oil from getting on the float. Disconnect ⅛-in. copper tubing from the bottom of the float housing. Plug this ⅛-in. tubing at once.

Remove cap screws from end of float housing. Be sure to hold the float housing firmly when these screws are removed, so that no strain will be applied to the soldered connection joining the condenser and float housing.

With the cap screws removed, the float valve assembly can be lifted out of the float housing.

Installing Float Valve

Always use a new gasket when installing a float valve housing. Examine the float valve carefully to make sure that it is free from any foreign substance. Make sure the needle works properly and that there is no dirt in the needle seat.

Test float needle for leak. Attach short piece of ¼-in. copper tubing to outlet of float; attach drum of ethyl chloride to ¼-in. tube. Open valve on drum. Note if refrigerant leaks through needle when float ball is down and needle is in seat.

Lift the float ball until ethyl chloride flows through needle seat. Drop the ball so that needle will close and note if gas flows through needle seat. Submerge float needle seat in oil to check needle for gas leak.

If needle seat is tight, place the float valve assembly in the housing. Draw up evenly on the bolts in the end plate. Be sure to hold the housing firmly while drawing up on these bolts.

Connect ⅛-in. tubing to receiver. Close the purge cock on receiver. Start machine by moving lever on "Sentinel" breaker to the "On" position.

Observe gauge reading. Purge air from system until operating pressures are normal.

Removing Condenser Fan Assembly

Stop machine by moving lever on the breaker to the "Off" position. Remove the black fibre shroud. Disconnect the two fan motor terminals from the binding posts on the unit motor. Loosen set screw on top of motor clamp. Remove clamp and lift out the fan and motor assembly.

Installing Condenser Fan Assembly

Examine the assembly to be installed and make sure the fan blades are not bent or twisted. Make sure that the fan is properly attached to the motor shaft and that there is sufficient end-play to permit the motor to turn freely without vibration.

Place motor in the cradle, which is attached to the unit motor housing. Put on the motor clamp. Turn the fan by hand to make sure it is free and is not striking the condenser. Tighten clamp screw. Connect the fan motor terminals to binding posts of unit motor.

Be careful and do not apply strain sufficient to turn binding post. Insert screw driver in slot provided in binding post to prevent this post from turning. Caution: *If these binding posts are twisted a short circuit will develop inside motor housing.*

Start machine by moving lever on breaker to the "On" position. Inspect the fan to make sure it is operating freely and is not striking any part of the unit assembly. Replace the fan shroud.

Removing Check Valve

Stop machine by moving lever on "Sentinel" breaker to the "Off" position. Place plenty of cloths beneath the check valve to prevent oil and ethyl chloride from running on the floor.

Disconnect ⅜-in. tube from check valve.

Remove check valve from center drive plate by unscrewing the valve.

Installing Check Valve

Carefully clean the threads on the check valve. Insert the end of the check valve, which has the pipe thread, in the center drive plate using new lead gasket. This joint must be made very tight.

Connect ⅜-in. copper tubing to the S.A.E. thread on check valve. Make sure that the cap on the vacuum gauge port is tight. Connect pressure gauge to charging valve and turn valve stem to gauge reading position. Start machine by moving lever on Sentinel breaker to the "On" position.

Observe pressure gauge readings. When connections are all tight, turn valve stem to operating position. Replace sealing cap of charging valve using a new lead gasket. Remove the gauge and cap the charging valve gauge connection.

Removing "Sentinel" Breaker

Disconnect electric service cord from house service. Remove name plate cover from front of breaker. Disconnect all leads from binding posts and remove stove bolts from bracket holding breaker in position.

Installing Breaker

Attach breaker to bracket at upper right-hand corner of machine compartment. Connect wire leads to terminal posts. Replace cover. Connect service cord to electric circuit. Move lever on breaker to "Off" position and then to "On" position.

Removing Thermostat

Disconnect Hubbell plug from thermostat contact by turning plug to the left, then lifting plug. Loosen thermostat clamp thumb screws. Remove thermostat from clamp by pulling upward with a twisting motion.

Installing Thermostat

Insert thermostat bulb into clamp mounted on the back of the chilling unit. The bottom of the thermostat bulb should be even with the bottom of the clamp.

When the bulb is in place, tighten the clamp by means of the thumb screws and be sure these screws are made tight so as to insure proper contact. Connect Hubbell plug to the thermostat contacts. Lock the plug in place by turning it to the right.

Removing Chilling Unit

Stop machine by pushing lever on "Sentinel" breaker to "Off" position. Place plenty of cloths on the food shelves directly under the chilling unit and on the bottom of the refrigerator. These cloths are to catch the liquid which will flow from the bottom connection on the chilling unit when it is removed.

Disconnect the plug connector from the thermostat. Disconnect the ¼-in. nut on the liquid line at the bottom of the chilling unit. Have ready a ¼-in. S.A.E. blind nut and cap this bottom connection immediately. Ethyl chloride will drain through this connection until it is capped.

Disconnect the ⅜-in. nut, connecting the suction line at the back of the chilling unit. Remove the four nuts holding the chilling unit to the top of the refrigerator cabinet. Care must be used in removing these nuts to see that the chilling unit is not dropped. If a new chilling unit is not immediately installed, plug the ends of the ¼-in. and ⅜-in. tubing with special plugs.

Installing Chilling Unit

Suspend chilling unit in refrigerator on the four anchor bolts. The use of an auto jack will greatly simplify this work. Make sure that the nuts on these bolts are drawn up tight and that the chilling unit is level in the refrigerator.

Connect the ⅛-in. copper tubing to bottom of chilling unit. Connect the ⅜-in. copper tubing to the connection at the back of chilling unit.

Mount thermostat on chilling unit. Make sure that the thermostat clamp is tight. Connect Hubbell plug to contact on thermostat. Charge the machine with ethyl chloride. See charging instructions below.

Liquid Levels

The term "liquid level" means the amount of ethyl chloride in the chilling unit. Successful operation depends upon maintaining this liquid level within certain limits. The frost line on the chilling unit indicates clearly the liquid level in the system.

A correct charge will be indicated when the frost is about 1½ in. from the top of the chilling unit. This would bring the frost even with the ⅜-in. outport at the back of the chilling unit. It is possible at different stages of operation that the entire surface of the chilling unit will be covered with frost.

Undercharge of Ethyl Chloride

An undercharge will be indicated by the frost line being considerably lower than the ⅜-in. outport connection or much more than 1½ in from the top of the unit. The frost line will show on the chilling unit only as far up as the liquid level.

In order to be sure that the machine is undercharged, it will have to be operated for at least an hour, or until the chilling unit and the refrigerator are cold enough to stop the machine on thermostat. In making this test, you should also have your pressure gauge attached and be sure that the machine is operating under normal conditions.

Overcharge of Ethyl Chloride

The action of the machine differs with the amount of the overcharge of ethyl chloride in it. With a slight overcharge, the chilling unit will frost all over, and the ⅜-in. return line outside of the refrigerator, will become frosted.

If the overcharge is greater, the chilling unit or return line will not frost but the return line, will be very cold. Under this condition, the unit will operate continuously and as it will be operating under a heavy load, there will be little or no refrigeration.

To remedy this condition, purge gas out of the system at receiver until frost disappears on ⅜-in. return line outside of refrigerator. While purging be sure the machine is in operation.

Service Data on Other Refrigerators

This article is one of a series published by Electric Refrigeration News to give the service man help in servicing various makes of machines. Most of the makes described to date have been "orphan" machines on which service information is no longer readily available.

Service instructions on the following makes were published in these issues:

Absopure household	March 25, 1931
Majestic hermetic	Aug. 16, 1933
Allison	May 30 & June 6, 1934
Welsbach	June 13, 20, & 27, 1934
Rice household	July 4, 1934
Wayne household	July 11, 1934
Absopure com'l	July 18, 25, & Aug. 1, '34
Iceberg	Aug. 8, 1934
U. S. Hermetic	Aug. 15, 1934
Belding-Hall ElectrICE	Aug. 22 & 29, 1934
Majestic standard	Sept. 12, 19, & 26, '34

Charging Holmes Machines

To recharge the system, proceed as follows:

Make sure the lever on "Sentinel" breaker is on the "Off" position. Remove blind nut on charging valve and attach to it a short piece of ¼-in. copper tubing.

Pour one ounce of Columbia Spirits into charging tube. Connect charging drum to the tube. Remove sealing cap from charging valve. Turn valve stem to charging position. Turn drum to a position that will permit ethyl chloride liquid to flow to machine.

Open valve on charging drum. This will permit refrigerant in the drum to flow directly into the condenser.

By opening and closing the purge valve on the float housing while ethyl chloride is flowing from the drum, the air in the condenser and float housing will be forced out.

The liquid ethyl chloride will flow into the float housing. Permit the float ball to rise and the liquid ethyl chloride will pass through the ⅛-in. copper tubing line into the chilling unit.

If the chilling unit is warm, the ethyl chloride will boil violently. By opening and closing the purge cock on the chilling unit, the air in the unit will be allowed to escape, permitting a larger amount of liquid ethyl chloride to enter chilling unit.

Caution: Do not open this purge cock except when the machine is standing idle and ethyl chloride is being charged into the system. *A complete charge for the Holmes unit is 5 lbs. 2 oz.*

If the chilling unit is warm, it may not be possible to get this full charge in the machine on the first attempt. After a portion of the charge is placed in the unit, the charging valve should be adjusted to operating position and the machine allowed to run until the chilling unit is cool, when the balance of the charge may be added.

When the machine is fully charged, close the valve on the charging drum. Turn charging valve stem to operating position. Remove the charging tube connection from the valve. Connect pressure gauge to the charging valve. Turn valve stem to gauge reading position.

Replace the sealing cap on valve. Start the machine, watching the gauge to determine if all the air has been expelled from the system. See "Gauge Readings" in last week's issue.

Adding Refrigerant to the System

When an inspection shows that the system has lost a part of its charge, ethyl chloride should be added as follows:

Test the system thoroughly for leaks, as explained below.

When the leaks have been found and corrected, connect charging drum to valve. See charging instructions.

Open the valve on drum and allow a small amount of ethyl chloride to flow into the condenser. This operation may be simplified by opening the pet-cock on chilling unit shortly after you have determined whether liquid is passing through the float valve into the chilling unit. Allow liquid to flow from the service drum through the float valve into the chilling unit for one-half minute.

Close the valve on charging drum and turn valve stem to operating position. Start machine by moving lever on "Sentinel" breaker to the "On" position.

Allow machine to operate about 30 minutes, and observe frost line on chilling unit. See paragraph above on Liquid Levels. If proper liquid level has not been secured, repeat operation as per above paragraph.

After the proper liquid level has been secured by adding sufficient ethyl chloride, remove charging drum and tubing as explained under Charging.

Locating Leaks

In testing for leaks, use a flashlight. *Do not use matches or an open flame,* as ethyl chloride is inflammable.

If there is a leak on the pressure side, ethyl chloride will escape into the air. If the leak is on the low or vacuum side, air will be drawn into the system. This intake of air, when compressed into the high side of the system, will create excessive pressure and prevent the machine from operating properly.

To test for leaks, proceed as follows:

Install pressure gauge on charging valve, as described last week. Set charging valve for gauge reading. Remove oil plug on compressor dome. Screw an air valve into oil plug opening. Make sure this connection is tight—use a new lead gasket. Connect air pump to air valve. Pump air into the system. Build up a pressure of 60 lbs. on the gauge.

Lift the float ball using electromagnet. This will permit the air to enter the low side of the system. You will know the float is lifted by the drop in pressure on the pressure gauge. Pump up the air pressure again and repeat the operation until you have a constant pressure of 60 lbs. throughout the entire system.

Make up a solution of soapy water. Do not mix this to a lather or suds, but be sure to have plenty of soap in it. Apply this solution to all copper tubing connections in the system. Examine each of these connections carefully. Use a small dental mirror and a flashlight to examine these connections. This will enable you to see all sides of every connection on the machine. Any leaks will be indicated by small bubbles.

A light grade of lubricating oil is sometimes used in place of soapy water. Either application is satisfactory. Make absolutely sure that the system is tight before calling your test complete. After all leaks have been closed, relieve the air pressure in the system at the gauge.

Remove the air valve. Replace the cap nut using a new lead gasket. Start machine and watch the pressure on the gauge.

Purge the air from the system through the purge cock on the float housing until the gauge reading remains constant.

Adding Oil to System

To add oil to the system, remove plug on compressor dome. Add oil until it overflows this opening. The full oil charge is about 2½ pints of "Ursa" heavy oil.

Speed Up INSTALLATIONS with IMPERIAL EQUIPMENT

Imperial engineers are always in line with the latest needs in special tools for quick, accurate installation. Three of our designs are shown:

IMPERIAL FLARING TOOL

Gives tubing the proper flare to assure a perfectly tight joint. No loose dies; no vise required.
No. 93-F for 3/16" to 1/2" tubing.....$3.00
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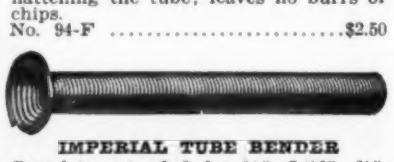
IMPERIAL TUBE CUTTER

For all sizes of tubing, from 3/16" to ⅝". A clean right-angle cut without flattening the tube; leaves no burrs or chips.
No. 94-F $2.50



IMPERIAL TUBE BENDER

Complete set of 6 for ¼", 5/16", ⅜", 7/16", ½" and ⅝" tubing.
No. 101-F $2.75

In addition to service tools, we manufacture a complete line of refrigerator fittings and valves—the latter including several new packless valves in various types. Write for Catalog No. 77-B.

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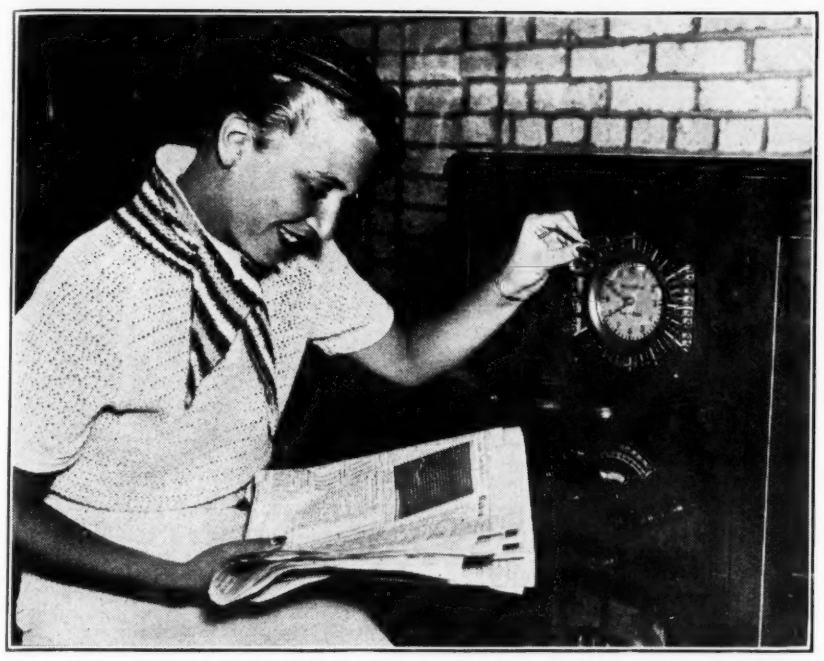
Manufacturers of "Genuine Detroit" Automatic and Thermostatic Expansion Valves, American Cubemakers, American Refrigeration Sections, Automatic Controls for Temperature and Pressure, Electric Valves for Refrigerant and Water Control, Thermostats, Humidistats and complete controls for Air Conditioning.

Descriptive literature gladly sent upon request

Division of
AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Preparing the 'Robot' Radio



Mrs. Roy Bolger, wife of the radio star, is shown setting the device on the new Atwater Kent radio which tunes itself on and off different stations according to a pre-selected schedule. It can be set for a 12-hour run.

BOOKS

First Assignment in G-E Training Course

(This is the first in a series of reviews of books comprising General Electric Co.'s new course of kitchen appliance salesmanship for its salesmen, prepared by LaSalle Extension University. The following covers Assignment 1.)

AS might be expected, the first book in this series is somewhat given over to generalities, but this does not mean that it is insubstantial in content. Rather, it is worthwhile because it does a pretty thorough job of laying a foundation upon which the salesman-student can build real selling ability as the course proceeds.

After a few remarks on the stability of the General Electric Co., Assignment 1 jumps into a discussion of prospects—who they are and where to find them—and submits that a prospect "is anyone who needs and can afford what you have to sell, whether she knows it or not."

The man who has the General Electric refrigerator, range, and dishwasher to sell is more than a salesman, the book explains. He is a G-E modern kitchen representative, offering every housewife the glass slipper of freedom from wrinkle-bringing drudgery, and he should think in those terms—sell the all-electric kitchen idea, rather than one particular appliance.

Page after page of first-class pointers on proper use of the five buying motives is an important part of this book. First they are listed—comfort and convenience, protection and safety, gain and economy, satisfaction of affection, satisfaction of pride. Then comes instruction on how to appeal to these motives, with a good collection of examples (which are a big help in a study of this kind).

After showing how each of the General Electric kitchen appliances appeals to these motives, the book bundles all of these up and shows how the salesman can sell the electric kitchen by presenting its four main functions—procurement, preservation, preparation, and sanitation of food.

Having given the dope on *why* the buyer buys, the manual swings into *how* he buys, and outlines the five buying decisions: the need, the thing to fill the need, the source, the price, the time. An accompanying discussion shows how he can maneuver his prospect into making each of these decisions during the course of his presentation.

It doesn't stop at that, though. It does not assume that every salesman will be able to cause the reaching of these decisions in apple-pie order. It gives the strategy for locating the missing decision when a salesman has done his stuff and still hasn't the order signed.

Part 4 is an exposition on the selling process, and there is a lot of meat in it. It tells the difference between a sale and a purchase, shows how to sell advantages, gain decisions, prove advantages, get action, and points out clearly how a convincing presentation of each of a product's features culminates in sale of that product in its entirety.

Last section of the book is a self-check review, in which questions are listed by which the reader may determine whether the pointers he has read have been *piled* or *filed*.

It might be well to comment here that LaSalle Extension has done a sweet job of preparing this and other books in the series. Experience-tested instruction has been expertly put in a form that a salesman can enjoy studying, even after a hard day at the doorbells.

Managing a Sales Territory

Author: J. C. Aspley. Publisher: Dartnell Corp., Chicago and New York City. Price: $1. Pages: 110. Date of Publication: 1930.

PROBABLY the best feature of "Managing a Sales Territory" is that it doesn't mince words. The ideas it presents are not new, and the author does not claim them to be. But when he points out common sales errors, he does it in such everyday language that a salesman could not help recognizing himself as either guilty or innocent of them. That is why the book is worth reading.

Title may be misleading. The book is not written especially for sales managers, but rather for salesmen—and shows them how important it is to *manage* a territory, rather than work through it in hit-or-miss fashion. So closely is this thought linked with discussions on straight selling that it is often difficult to distinguish one from the other. This actually gives the book a two-in-one value.

Salesmen-readers will recognize that "Managing a Sales Territory" is also deserving of serious attention because it is based on fact, not theory. Its ideas, criticisms, and suggestions have been ferreted from the experience of executives of dozens of responsible firms selling everything from life insurance to crackerjack (see list of collaborators). It is both a guide in selling and a standard by which a salesman can appraise his own methods.

In 100-odd small pages, which can be easily read in an evening, Mr. Aspley writes on such subjects as the worth of large territories, using old customers to sell new ones, the "hurry through" habit, using the editor and the banker, etc.

Below is one paragraph from the chapter on "Knowing a Territory Too Well," one of the best in the book. It is quoted principally because it is typical of Mr. Aspley's style and will give an idea of how easily the book may be read; incidentally, the point made is worth considering.

"It is likewise possible to know your customers too well. The more friendly you become the more difficult it is to do a real selling job. Instead of calling and presenting a straight-from-the-shoulder sales solicitation, beginning with creating the want and ending with the order, you go in and talk golf, fishing, or whatever his special interest may be. Getting the order becomes incidental. Naturally, you don't bear down on a friend."

Chest Model Opens 'Forgotten' Market, Zimmerman Declares

CLEVELAND—"The forgotten electrical home, representing approximately two-thirds of a utility's domestic customers, offers an imposing market for the G-E Liftop refrigerator," P. B. Zimmerman, manager of General Electric's specialty appliance sales department, told representatives of the Associated Gas & Electric Co. at a three-day meeting of the utility's merchandising chiefs at Nela Park Sept. 24, 25, and 26.

"And what is of supreme importance to the utility," Mr. Zimmerman pointed out, "is that the Liftop, with its low price, can be used as the entering wedge in turning unprofitable consumers into profitable accounts by increasing the domestic load."

Neglected Secondary Market

"We have concentrated most of our efforts on one-third of our potential customers and neglected the great secondary market. Knowing that this vast uncultivated market is interested in electric refrigeration, we realized that a refrigerator must be built with an operating cost a little less than the present light bill of the small-income home and large enough to take care of perishable foods needed by the average small-income family. The Liftop was the answer.

Segregate Sales Effort

"Being radically different and designed for a market heretofore uncultivated, we believe it necessary, if the Liftop is to be merchandised most successfully, that retail outlets such as utilities set up separate selling organizations to reach the great secondary market for electric refrigeration and other appliances. By segregating efforts for going after this great forgotten market, utilities have a wonderful opportunity . . . to put the small income consumer on a paying basis.

"The greatest concern of all utilities should be their vast secondary markets and how they are going to make them profitable. I know of no better way of developing unprofitable accounts than by persistent and intelligent merchandising of the Liftop."

Other Speakers

Other speakers on the specialty appliance sales department's program were R. E. Shackleford, district manager for the Bridgeport merchandising department, who talked on "Small Appliances" and "Value of Radio"; C. P. Randolph, chief engineer of the Edison General Electric Appliance Co., Chicago, "Water Heating"; C. J. Enderle, "G-E Dishwasher"; J. R. Poteat, manager, range division, "Ranges"; Salesmanager A. M. Sweeney, "Combination Refrigerator and Range"; and R. S. Thurston, "Air Conditioning."

Mr. Poteat said 1934 would be the greatest range year in the history of the industry and predicted that 1935 range sales would be even greater.

Sessions held Sept. 24 and 26 were in charge of G-E's lamp department. Dr. Daniel Starch was chairman and principal speaker the last day of the conference.

Associated Representatives Present

Representatives of the Associated Gas & Electric Co. attending: G. J. Clute, William Glatzel, Patchogue Electric Light Co., Patchogue, Long Island; W. G. Burrill, C. J. Rammling, F. D. Campbell, Staten Island Edison Co., Staten Island; J. H. Sumner, R. J. Rutherford, F. W. Randall, E. R. Millen, A. Jones, R. MacIvor, H. H. Golden, H. Hill, New England Gas & Electric Association, Cambridge, Mass.

H. A. Thomas, S. E. Thomas, C. R. Rudy, New York State Electric & Gas Corp., Binghampton, N. Y.; H. J. Taillie, Rochester Gas & Electric Corp., Rochester; W. G. Rhodes, New York State Electric & Gas Corp., Mechanicville, N. Y.; W. F. Moses, L. D. Reed, Empire Gas & Electric Co., Geneva, N. Y.; H. E. Gough, J. J. Doyle, T. S. Craig, Elmira Light, Heat & Power Co., Elmira, N. Y.

W. H. Doran, New York State Electric & Gas Corp., Lancaster, N. Y.; T. W. Connette, New York State Electric & Gas Corp., Lockport, N. Y.; E. Leier, Broad River Power Co., Columbia, S. C.; M. McKinney, E. G. Shreck, Kentucky-Tennessee Light & Power Co., Bowling Green, Ky.

J. A. Podmore, Florida Public Service Co., Orlando, Fla.; E. H. Werner, F. S. Hoefer, H. B. Allen, P. A. Stang, J. C. Eyler, Metropolitan Edison Co., Reading, Pa.; M. J. Fulton, W. E. Townsend, P. H. Harris, Pennsylvania Electric Co., Johnstown, Pa.; H. V. Armstrong, E. C. Weston, F. W. Stone, Electric & Gas Utilities, Terre Haute, Ind.

L. H. McCray, J. M. Smith, L. Clavin, R. C. Saylor, Erie Lighting Co., Erie, Pa.; President Pardee, L. D. West, H. C. Thuerk, B. M. Fast, A. E. Ward, H. M. Henry, L. Weiss, S. J. Magee, R. D. Jennison, W. Partridge, H. B. Atkin, C. L. Cadle, A. R. Tremaine, R. D. Donaldson, F. D. Campbell, Utility Management Corp., New York City; W. A. Seten, Manila Electric Co., Manila, P. I.

Leonard's Oldest Model Is Honored

Mrs. Mary V. Peyton and the 53-year-old Leonard which is finding a resting place in Henry Ford's famous Greenfield Village. Mrs. Peyton bought the refrigerator in 1881.

Ex-Cell-O Names Huntley To Field Position

DETROIT—O. J. Huntley, during the past few years a precision boring demonstrator for Ex-Cell-O Aircraft & Tool Corp., has been transferred to that organization's sales staff, and will work in the Dayton territory, according to John E. Wells, advertising manager. He will handle the Ex-Cell-O line of cutting tools, bushings, spindles, multiple and precision boring equipment.

Stewart-Warner Distributor Opens Branch Office

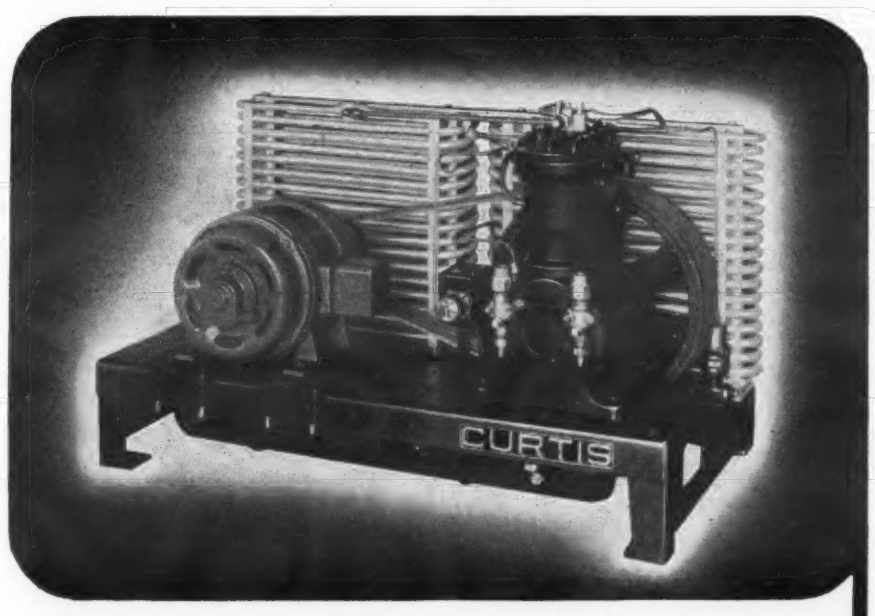
NEW YORK CITY—Wholesale Radio Equipment Co., distributor of Stewart-Warner electric refrigerators and Stewart-Warner and Zenith radios, has opened branch offices and showrooms at 182 Central Ave., Newark.

200-Page Catalog Lists Majestic Properties

CHICAGO — Advertising for the liquidation sale of the Grigsby-Grunow Co., maker of Majestic radios, radio tubes, and refrigerators, is being placed in October issues of 12 industrial and trade papers.

The advertising is designed to secure inquiries for the 200-page catalog prepared by Russell T. Gray, Inc., agency, listing more than 16,000 pieces of property to be sold. The equipment is listed according to its generic classification, manufacturers' names and serial numbers and again as part of complete departments.

Liquidation sale is under the direction of Frank M. McKey, trustee in bankruptcy for the company. Salesmen will be at the plant to show the equipment to prospective buyers or their agents. Negotiations with distant buyers will be transacted by mail.



CURTIS REFRIGERATION

Units to fit every need

CURTIS, one of the oldest compressor manufacturers, offers one of the most complete lines of refrigerating units—1/6th to 2 H. P. air cooled; 1/3rd to 5 H. P. water cooled—reflecting 80 years engineering, designing and manufacturing experience. Some desirable territories are still open for reliable distributors. *Write for details.*

80 SUCCESSFUL YEARS ESTABLISHED 1854

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Curtis Refrigerating Machine Co.
Division of Curtis Manufacturing Co.
1912 Kienlen Ave., St. Louis, U. S. A.
518H Hudson Terminal New York City

Canadian Salesmen Visit G-E Plant

CLEVELAND—Thirty-five General Electric dealers and salesmen from Toronto and principal cities of Ontario, winners in a July and August sales contest, were entertained at Nela Park here recently as guests of the Canadian General Electric Co.

The day's program, arranged by Paul Dow, included an inspection of the G-E Institute and talks by Manager P. B. Zimmerman; W. D. Riddle of the kitchen planning section; Charles Enderle of the dishwasher division; and Fred Cuffe of the range division of the specialty appliance sales department.

Canadian delegation was in charge of W. J. Packham, manager, home appliance sales department, Canadian General Electric Co., Toronto. He said G-E appliance sales in Ontario are 50 per cent ahead of a year ago.

Mr. Zimmerman predicted that 1935 will be the greatest electrical appliance year in the history of the industry. "Sales potentialities are great," he said, "and every appliance dealer and salesman now has a real opportunity, as people become more receptive to the many advantages of electrical home servants." He advised the consistent use of the electric kitchen theme in their sales work.

Dealers and salesmen in the Canadian party were: W. Mason, Modern Home Electric Co., Toronto; E. McCracken, W. J. Packham, and J. G. Emler, Canadian General Electric Co., Toronto; Larry Maughan, Deer Park Electric Co., Toronto; H. Gibson and A. Gibson, Danforth Radio Co., Toronto; A. S. Lawson, Culley Electric Co., Hamilton; Don Christian, Oshawa; R. H. Lundy and R. J. Charlton, Toronto Hardware, Toronto.

G. Ferguson, Robert Simpson Co., Ltd., Toronto; John Horne, Jr., Port Colborne; E. D. Jones, T. Eaton Co., Ltd., Toronto; W. C. Duerr, Duerr Electric, Kitchener; D. Davidson, Wentworth Radio, Kitchener; J. K. Root, Electrical Housekeeping, Toronto; J. C. McPhillips, J. A. Robinson, and H. F. Laragh, W. McPhillips, Ltd., London.

G. L. Davidson, Mills & Hardwin, Ltd., Toronto; C. G. Crane and J. Tomlinson, McDonald & Willson, Ltd., Toronto; A. Soukly and H. W. Maynar, Modern Home Electric, Toronto; J. V. Logan, Canadian General Electric Co., Toronto; R. J. Reid, Boyd Electric Co., Kingston; H. L. Pollack and J. H. Screaton, Pollack Electric, London; G. P. Ricketts and George Roberts, Mills & Hardwin, Ltd., Toronto; C. R. Kelly and J. Cranham, Electrical Housekeeping, Toronto; A. B. Kamins, Dunnville.

Stewart-Warner Dealers Entertained on Cruise

NEW YORK CITY—Nineteen hundred radio dealers, employees, and families were the guests of Morty and Sam Salzman of the Wholesale Radio Equipment Co., distributor of Stewart-Warner radios and electric refrigerators on an all-day cruise to Bear Mountain and return recently.

Frank Hiter, vice president and general sales manager of Stewart-Warner, A. B. Dicus, sales promotion manager of the same organization, and Fred Bollman of Blackett-Sample-Hummert, Inc., were also guests.

Entertainment was provided by stage personalities, radio stars, and members of the Stewart-Warner sales organization on board ship. Irving Kauffman, radio and stage actor was one of the entertainers.

During the seven-hour shore leave, a banquet was held at the Bear Mountain Inn, followed by a floor show and dance at the skating rink.

Illinois Professor Writing Book on Porcelain

CHICAGO—Prof. A. I. Andrews of the University of Illinois, Urbana, Ill., has prepared the manuscript for a book on porcelain enamels which is now being sent to the publisher. This book should be ready for distribution before the first of the year.

It consists of 13 chapters and an appendix, including all of the different phases of enameling from the raw materials to the properties and tests of the finished product. The book will contain 124 figures and 58 tables.

Westinghouse Votes Dividend

NEW YORK CITY—At a recent meeting of the board of directors of the Westinghouse Electric & Mfg. Co. a dividend of 87½ cents on preferred stock was declared payable, Oct. 31, to stockholders of record Oct. 15.

Gilmer Issues New Catalog on V-Belts

PHILADELPHIA — A new V-belt catalog, for both multiple-groove and fractional horsepower drives, has been issued by L. H. Gilmer Co.

Number of Wholesale Firms Increases but Total Sales Drop

NEW YORK CITY—Although the drop in volume of the country's wholesale trade has been great since 1929, the number of firms engaged in the wholesale business is almost as large as in the prosperous years toward the end of the last decade.

Business Week, in a recent issue brings out this fact in an article occasioned by issuance of preliminary totals on the 1933 census of wholesaling, then goes on to compare '33 findings with some obtained in the 1929 census of distribution.

It lays emphasis on the fact that some wholesale firms—notably those most recently organized—are confining their operations to definite regions, strengthening a trend in that direction which began during the depression's early years.

Sales Drop 55.9 Per Cent

Wholesale trade's net sales in 1929 were $69,056,000,000; in 1933 they totaled $30,482,000,000, a decrease of 55.9 per cent. Number of establishments in 1929 was 169,655; in 1933 it was 159,724, a decrease of 5.9 per cent. Number of wholesale employees in '29 was 1,605,042; in 1933 it was 1,179,358, a drop of 26.5 per cent. Salaries and wages paid in 1929 aggregated $3,010,000,000; in 1933, $1,645,000,000, a 45.3 per cent decline. Average sales per employee in '29 were $43,025; in 1933, $25,846, a decrease of 40 per cent.

Fact that in 1933 there were practically as many companies in business as in 1929 does not mean that all but a few survived throughout the lean years. There were many failures, but by 1933 the number had grown by employees of closed-door organizations starting up for themselves in business, the magazine says.

Comparison of Findings

Remainder of the article is an analytical comparison of the '33 census findings with those of 1929, as reported from each of the nine economic regions of the country. The comments follow:

"Each of the six New England states suffered substantial reductions in number of concerns but the region lost less than average of sales volume, and four of its six states actually increased their share of the country's total.

"The six states in the central Atlantic region enlarged their slice from 35.38 per cent to 36.19 per cent of available volume, but 4,548 concerns dropped out in the four years. Losses of sales volume by the individual states in this region were within the range of 46.2 per cent to 59.5 per cent.

"The six states in the southeastern region each showed decreases in the number of concerns, the entire region losing 12.9 per cent of its wholesalers, but making a slight gain in its slice of national volume. The seven states in the Gulf southwest lost 18.3 per cent of their wholesalers, and the region saw 1.35 per cent trimmed off its share of national volume.

"Excepting the four states of the central northwest—the wheat region—figures for western groups reflect the more venturesome spirit of the open spaces. The number of concerns fighting for a shrunken volume of trade showed amazing increases. For instance, the west mid-continent region, where sales volume dropped 65.1 per cent in four years, Kansas, 72.4 per cent worse off in volume, added 510, nearly 12 per cent, to its number of wholesalers; Nebraska added 390, Wyoming 67, or nearly 25 per cent.

"Of the eight states in the mid-west, all except Kentucky put more wholesalers in business, 2,135 in all, though losses in sales ranged from 49 per cent to 60.3 per cent.

"All five states in the pacific southwest were among those losing less than average in sales volume, their decreases ranging from 27.6 per cent for Nevada to 52.9 per cent for New Mexico. However, all except Utah increased the number of wholesalers by a substantial margin, while each state also held or bettered its slice of the available volume, and the entire region increased its portion from 6.5 per cent in 1929 to 8 per cent in 1933.

"Among individual states New York reinforced its top position, taking 25.79 per cent of available volume in 1933 against 25.41 per cent in 1929, although actual sales dropped 55.3 per cent. At the other extreme Nevada, doing the smallest volume of wholesale business, established a unique record. It showed the least loss in sales, only 27.6 per cent and increased its share of the country's volume from .02 per cent to .03 per cent.

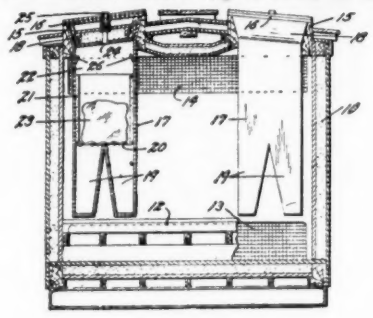
"Twenty-four other states increased their slice of the total, while 23 showed declines, and Rhode Island and New Mexico share the distinction of having held exactly the same sized slice in 1933 as in 1929. Kansas took the most severe tumble in ranking—from fourteenth in 1929 to twenty-fourth in 1933. Wisconsin recorded the best climb from seventeenth to twelfth place."

PATENTS

Issued Oct. 2, 1934

1,975,177. SOLIDIFIED GAS REFRIGERATOR. Samuel T. Sherrick, Denver, Colo. Application Aug. 29, 1932. Serial No. 630,843. 4 Claims. (Cl. 62—91.5.)

1. A refrigerating container for solidified carbon dioxide comprising: a container for said material; hollow legs formed in the



1,975,177

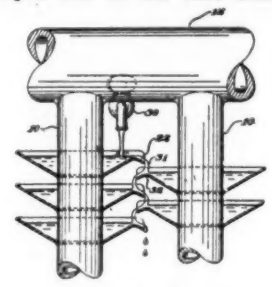
bottom of said container; a screen member separating said legs from the container proper; insulating material covering the inner walls of said container, said insulating material terminating at said screen so as to leave said legs uninsulated; a cover for said container; and a gas escape vent through said cover.

1,975,232. FREEZING UNITS FOR HOUSEHOLD REFRIGERATORS. Leland G. Knapp, Chicago, Ill., assignor to Montgomery Ward & Co., Inc., Chicago, Ill., a corporation of Illinois. Application Oct. 30, 1929. Serial No. 403,374. 5 Claims. (Cl. 62—95.)

5. In a unit of the class described, the combination with a body having one end open and its opposite end closed and provided with a freezing compartment one end of which communicates with the open end of said body, the other end of said compartment being closed by the closed end of the body, said freezing compartment being spaced from the walls of the body and forming thereby unobstructed longitudinal vertical spaces being independent of and having no direct communication with each other, the top of the freezing compartment and the top of the body being separated to form a horizontal space therebetween, of a pipe bent into a loop formation to provide a series of expansion coils, the loops of said pipe being arranged to form vertical banks one of which fits within and occupies each of said longitudinal spaces, and a horizontal bank intermediate the vertical banks which lies over the top of the freezing compartment and occupies the horizontal space between the top of said compartment and said body.

1,975,267. METHOD AND APPARATUS FOR CONDITIONING AIR. George R. Goldthwaite, South Easton, Mass., assignor to B. F. Sturtevant Co., Hyde Park, Mass., a corporation of Massachusetts. Application Aug. 25, 1931. Serial No. 559,171. 12 Claims. (Cl. 257—180.)

1. Air conditioning apparatus comprising a tube, and circumferential inverted cone-shaped fins on the tube constructed



1,975,267

and arranged to maintain bodies of water to be transversely swept by the air.

1,975,275. REFRIGERATOR CASE. George J. Hopkins, Kendallville, Ind., assignor to McCray Refrigerator Co., Kendallville, Ind., a corporation of Indiana. Application June 10, 1933. Serial No. 675,253. 3 Claims. (Cl. 312—138.)

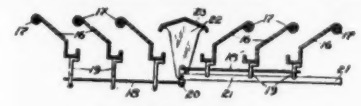
2. In a structure of the class described, a case having an opening therein whose upper and lower sills are each provided with an integrally formed longitudinal tongue projecting beyond the surface of the sill, a metallic channel bar member composed of spaced substantially parallel sides and a connecting tread portion and embracing the tongue of the lower sill, whose edges are embedded in the sill and molded integrally therewith to form a track, the sides of the channel bar member being provided with divergent longitudinal edge portions embedded in the sill beyond the adjacent tongue, and a door for said opening whose upper and lower sashes are each provided with a longitudinal groove slidably registering respectively with the tongues of the upper and lower sills of the opening and receiving the said tongues.

1,975,327. REFRIGERATOR SHELF. Jacob N. Loney, near Dayton, Ohio, assignor of 48 per cent to Ralph E. Adamson and Susan B. Adamson, near Dayton, Ohio. Application Dec. 20, 1933. Serial No. 703,259. 3 Claims. (Cl. 211—151.)

1. In a tray-receiving compartment, oppositely disposed horizontal members, top and bottom inwardly projecting flanges on said members, rollers freely mounted at the front ends of said members, oppositely disposed flanges formed on said rollers, a movable tray positioned on said rollers, roller-mounting members secured to the rear of said tray, rollers on said mounting members and movable between said flanges, and restricted stop portions formed on the flanges of said horizontal members for engagement by the rear rollers to limit the outward movement of the shelf.

1,975,337. REFRIGERATING APPARATUS. Otto G. Tinkey, Los Angeles, Calif. Application July 29, 1932. Serial No. 625,800. 4 Claims. (Cl. 62—103.)

1. In combination with refrigerating coils, of drip catching baffle means thereunder consisting of a series of parallel,



1,975,337

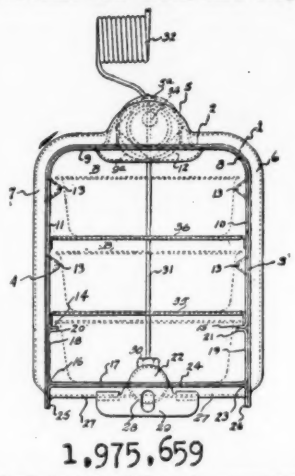
inclined members, each having along its lower edge a trough portion the outer edge of which lies below the plane of the inclination, said members being pivotally supported at their upper edges with means connecting their lower ends whereby the trough edges can be simultaneously moved together to vary the inclination slightly.

1,975,351. CAR REFRIGERATION MEANS. Fred John Day, Los Angeles, Calif. Application Oct. 11, 1932. Serial No. 637,218. 7 Claims. (Cl. 62—24.)

1. A means of the character described for a car having a wall therein forming a bunker, said wall having upper and lower openings for connecting said bunker with the storage space of said car, including: door means adjustably mounted on said wall to close part of said upper opening during the pre-cooling of said car; a fan set in the remaining part of said upper opening to provide a flow of air through a path including the interior of said bunker and the storage space of said car; and means for driving said fan, said door means being releasable to open position after the completion of the pre-cooling operation so as to permit a normal thermal circulation of said air through said path.

1,975,659. EVAPORATOR FOR REFRIGERATING DEVICES. Roland H. Money, Cincinnati, Ohio, assignor to The Crosley Radio Corp., Cincinnati, Ohio, a corporation of Ohio. Application June 13, 1933. Serial No. 675,571. 10 Claims. (Cl. 62—126.)

1. An evaporator for refrigerators adapted to enclose a central space or chamber upon at least four sides, said evaporator



1,975,659

formed of sheet metal parts comprising an outer member forming a side and at least portions of two adjacent sides, two inner members arranged in succession along said two adjacent sides to form the opposite sides of the evaporator, and a member to form a fourth outer side of said evaporator.

1,975,704. HEAT PUMP CYCLE AND METHOD OF OPERATING SAME. Gilbert Wilkes, Jacksonwald, Pa., assignor to Wilkes Avery Corp., New York, N. Y., a corporation of New York. Application July 28, 1933. Serial No. 682,721. 8 Claims. (Cl. 62—115.)

1. In operation of an ejector type heat pump comprising means to heat a body of refrigerant liquid, means to condense the vapor thus produced to a saturated liquid, and means to evaporate part of said saturated liquid, the method comprising expanding a portion of the liquid condensed and utilizing the energy released by expansion of the liquid to return liquid from the condenser to the heating means.

BUYER'S GUIDE

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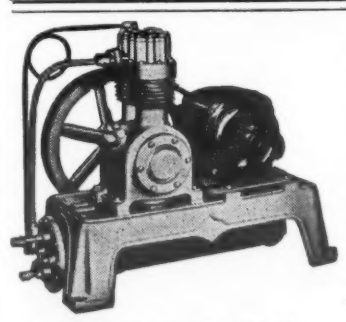

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Style EW—Water Cooled With Water Cooled Head
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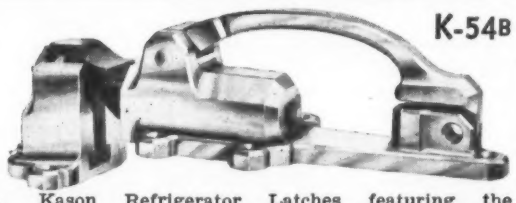
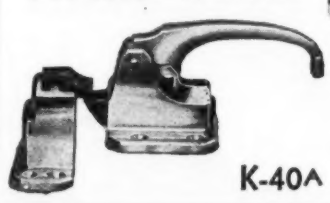


K-54B



K-40A

Kason Refrigerator Latches featuring the famous patented Micrometer strike for hairline offset adjustments and the rugged Forged Brass construction rank foremost in the field of refrigerator hardware. There is a Kason Lock for every refrigerator need.
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For all refrigerants. Easily serviced. Large screen area. Retention spring at inlet holds interior mobile parts in proper position and compensates for expansion and contraction of dehydrant. Any dehydrant can be used. Unless otherwise specified we ship with initial charge of Activated Alumina.
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QUESTIONS

Refrigeration Statistics

No. 1892 (Federal Power Commission, Washington, D. C.)—"By President Roosevelt's Executive Order No. 6251 of Aug. 19, 1933, the Federal Power Commission is authorized to make a survey of the power resources and requirements of the United States. The National Power Survey has been organized to carry on this work, one phase of which is a determination of the existing and potential market for electricity.

"For statistical information on the refrigeration industry, your organization has been suggested. Statistics covering the installations of refrigerators in the United States for the past several years would be of much value to the survey, and we are, therefore, asking your assistance in supplying them. We should appreciate having these figures for as many years back as they are available. We should also like to have any data on distribution of existing installations by states or any estimates thereof.

"Your cooperation in this matter will greatly facilitate the work of the survey."

Answer: ELECTRIC REFRIGERATION NEWS has made estimates of industry quantity and dollar sales by years extending as far back as 1919, and has also compiled monthly unit sales estimates from January, 1930, through August of this year. These sales figures, however, represent those by all manufacturers to distributors and dealers throughout the world rather than ultimate installations or sales to actual users.

The record of household electric refrigerator sales by years and by months through and including 1933 is given in the 1934 REFRIGERATION DIRECTORY, published last March. Estimates of sales for the first seven months of 1934 were published in the Sept. 12 issue of ELECTRIC REFRIGERATION NEWS, and this tabulation with the addition of the August figure was published in the Oct. 3 issue.

As yet no estimates have been made of sales by states for the industry, but sales by states as compiled by the Refrigeration Division of the National Electrical Manufacturers Association (Nema) are given for the years 1932 and 1933 in the DIRECTORY. Monthly sales by states during 1934 have been published in the weekly issues of ELECTRIC REFRIGERATION NEWS as soon as released.

The DIRECTORY also contains considerable information covering sales of commercial and industrial refrigerating machines and applications in past years as well as a record of wired homes and potential markets for household electric refrigerators in communities of 2,500 population and over in the United States.

Cabinet Manufacturers

No. 1893 (Engineers, Palestine)—"We are regular readers of your very valuable journal and have already got in touch with various manufacturers through your advertisement columns.

"We have, however, not been able to find manufacturers of actual domestic refrigerator cabinets or their components such as porcelain enameled interior containers or liners, interior door panels, outside panels and lids, etc. We are actually looking for a cabinet of about 4 cu. ft. contents, interior enameled, exterior sprayed white, made in sections, so that it can be taken apart for transport, complete with inner liner which should be in one piece without seams and door.

"We should be greatly obliged if you will kindly put us in touch with suitable manufacturers. If complete cabinets are not available, kindly supply addresses of makers of the parts, such as the interior liner, and corresponding interior door panel, outer panels, etc.

"We should not like to trespass too much on your kindness, but in order to save time you would be doing us a great favor if you would kindly ask suitable manufacturers to communicate with us directly, enclosing fullest details such as dimension sketches, blue prints, photographs if available, export prices for various quantities (at least in dozen lots), etc."

Answer: See page 287 of the 1934 REFRIGERATION DIRECTORY for a complete list of household refrigerator cabinet manufacturers. Manufacturers of component parts of cabinets are listed beginning on page 167.

Coin Meter Makers

No. 1894 (Manufacturing Chemists, Minnesota)—"Can you give us the names and addresses of manufacturers of coin meters such as are used by Frigidaire, etc.

"We are particularly interested in a clock meter such as Bugetklok which is made here in Minneapolis. We understand that there are several of these but one in particular made, we believe, in New Jersey."

Answer: These companies manufacture coin meters for use in connection with household electric refrigerators:

General Electric Co.
Industrial Dept., Schenectady, N. Y.

International Register Co.
15 S. Throop St., Chicago, Ill.

Landis & Gyr, Inc.
104 Fifth Ave., New York City.

Mills Novelty Co.
4100 Fullerton Ave., Chicago, Ill.

Frank A. Pierman
Ottawa, Ohio.

J. T. Seeburg Corp.
1510 Dayton St., Chicago, Ill.

Zell Products Co.
536 Broadway, New York City.

Humidifiers for Homes

No. 1895 (Manufacturer, New York)—"Will you kindly send me the names of a few of the more important manufacturers of humidifiers for home use.

"The type of equipment that I have in mind is a unit that can be installed in an ordinary room for humidifying the atmosphere without any direct connection to the heating system.

"Your kindness in sending me this information will be very much appreciated."

Answer: Listed below are a number of companies which manufacture humidifiers:

American Air Purifier Corp.
208 E. 27th St., New York City.

American Moistening Co.
260 W. Exchange St., Providence, R. I.

American Radiator Co.
40 W. 40th St., New York City.

Ames Co., W. R.
150 Hooper St., San Francisco, Calif.

Automatic Humidifier Co.
Cedar Rapids, Iowa.

Carrier Engineering Corp.
850 Frelinghuysen Ave., Newark, N. J.

Emerson Electric Mfg. Co.
2012 Washington Ave., St. Louis, Mo.

General Electric Co.
Air Conditioning Dept.
570 Lexington Ave., New York City.

Humidity Headquarters
1893 E. 55th St., Cleveland, Ohio.

International Moistening Co.
36 Exchange Place, Providence, R. I.

Lewis Air Conditioners, Inc.
829 S. Second Ave., Minneapolis, Minn.

Murray & Nickell Mfg. Co.
2612 Arthington St., Chicago, Ill.

Norge Corp.
670 E. Woodbridge, Detroit, Mich.

Parks-Cramer Co.
Main St., Fitchburg, Mass.

Penn Electric Switch Co.
200 E. Walnut St., Des Moines, Iowa.

Russell Electric Co.
340 W. Huron St., Chicago, Ill.

Somers, Inc., H. J.
1984 W. Lafayette Blvd., Detroit, Mich.

Standard Engineering Works
Pawtucket, R. I.

Sturtevant Co., B. F.
Hyde Park, Boston, Mass.

Timken Silent Automatic Co.
100 Clark St., Detroit, Mich.

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

Workrite Specialty Co.
2855 N. 28th St., Milwaukee, Wis.

York Ice Machinery Corp.
York, Pa.

Non-Electric Refrigerators

No. 1896 (Exporters & Importers, New York)—"We have an inquiry for a non-electric iceless refrigerator for shipment to British West Africa, and your name has been given to us by the American Radiator Co., as possibly being able to put us in touch with a supplier of this type refrigerator."

Answer: (See below).

Kerosene Units

No. 1897 (Publisher, New York)—"We are interested in securing a list giving the names of manufacturers of kerosene refrigerators.

"Inasmuch as this type of refrigerator is not mentioned in your REFRIGERATION DIRECTORY, we are wondering whether you could supply us with this information.

"Among the manufacturers we have in mind, we can mention firms like Waukesha Motor of Waukesha, Perfection Stove Co., etc., who manufacture refrigerators operating on oil or kerosene.

"We thank you in advance for any information you can give us in this connection, as we receive many inquiries for this type of equipment from foreign countries, and should like to have a complete list of all the manufacturers."

Answer: The following companies are listed on page 274 of the 1934 REFRIGERATION DIRECTORY as manufacturers of absorption or heat-operated type household refrigerators:

Crosley Radio Corp.
Arlington St., Cincinnati, Ohio.
(Icy-Ball type)

Electrolux Refrigerator Sales, Inc.
Evansville, Ind.
(Both gas and kerosene-operated types)

Gibson Electric Refrigerator Corp.
Greenville, Mich.
(Kerosene-operated type)

Perfection Stove Co.
7609 Platt Ave., Cleveland, Ohio.
(Kerosene-operated type)

Several months ago the Waukesha Motor Co. of Waukesha, Wis., introduced a gasoline motor-driven household refrigerator powered by a ½-hp. gasoline engine.

Wired Homes

No. 1898 (Hardware Dealer, Missouri)—"We would like to obtain a report showing the number of residential electric meters by towns for the western half of Missouri, Kansas, and Oklahoma.

"Do you have this information? And what is our cost?"

Answer: A record of electrically wired homes in communities of 2,500 population and over is included in the 1934 REFRIGERATION DIRECTORY beginning on page 578.

The original survey of wired homes in the United States was made by the National Electric Light Association and released by the Bureau of Foreign and domestic Commerce in 1932, being published in its entirety in the 1932 REFRIGERATION DIRECTORY together with our own estimates of the potential market for household electric refrigerators.

Early in 1934 ELECTRIC REFRIGERATION NEWS made a survey among public utilities requesting revised data on wired homes and also on the potential market for household electric refrigerators. Revised information was published in the 1934 edition of the DIRECTORY in bold face type. Original unrevised wired homes data were printed in light face type. Potential market figures in light face type were obtained by applying 76.5 per cent to the number of wired homes in each community—this being the difference between the estimated national average saturation of 23.5 per cent (as of Jan. 1, 1934,) and 100 per cent.

Coin Meter Clocks

No. 1899 (Manufacturer, Minnesota)—"Kindly enter our subscription to the ELECTRIC REFRIGERATION NEWS. At the same time, kindly send us a half dozen back numbers that deal with the use of metered devices in the sale of refrigerators—both pro and con.

"We ourselves expect to introduce a perfected meter clock to the trade this fall and would be glad to receive any suggestions with regard to merchandising this item."

Answer: Articles dealing with coin meters can be found in the following issues of the NEWS this year: April 25, page 1; May 16, page 8; June 6, page 2; June 13, page 2; Aug. 1, page 17. Several of the articles published in the department store issue (Oct. 3) dealt with coin meter merchandising.

Beer Cooling Directory

No. 1900 (Engineering Society, Illinois)—"We have learned of your recent publication of *Beer Cooling Equipment*, and we should like very much, if possible, to publish a review of this work in our Journal. We shall be glad to send you a marked copy of the issue in which the notice is published.

"Your courtesy will be greatly appreciated if you are able to send us this volume for publicity purposes."

Answer: The BEER COOLING DIRECTORY AND HANDBOOK is now out of print, and our stock has been exhausted for some time.

Bacteriological Inserts

No. 1901 (Dept. of Commerce, Michigan)—"I have just received a letter from one of our refrigerator manufacturers telling of an inquiry they have received from abroad for a refrigerator fitted for use in hospitals for bacteriological purposes. It is believed that General Electric has a model from which the shelves have been removed and replaced by a cupboard having from 8 to 10 separate chests.

"The local company is now interested in knowing where such equipment might be secured for installation in their refrigerators, and I am wondering if you have any information which might be useful to them."

Answer: Bacteriological inserts for fitting in electric refrigerators used in hospitals are made by Stewart Sheet Metal Works, 6001 Lawton St., Detroit, Mich.

White Frost Parts

In the Sept. 26 issue of ELECTRIC REFRIGERATION NEWS inquirer No. 1859 requested a source of supply for water bottles for use in a White Frost refrigerator. One of our readers has recently informed us that these water bottles can be obtained from White Frost Service, c/o Mr. C. A. Castle, Jackson, Mich.

CLASSIFIED

RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

WANTED: Refrigerating Engineer, technical graduate, with varied ammonia experience, by large manufacturer for sales and estimating. Excellent opportunity for capable man, about 30 years. Salary. Write or phone Mr. Steenbergh, 850 Frelinghuysen Ave., Newark, N. J. Bigelow 3-3600.

INDEPENDENT SERVICE COMPANIES

HALECTRIC thermostat repair service. B & B, G.E., Cutler-Hammer, Penn, Ranco, Tag., etc. Float valve needles reground and polished. Expansion valves repaired. Gas service, Ethyl, Methyl, Iso-Butane, Sulphur. Your cylinder or ours. Competitive prices. Distributors of "Flawless Brand" tubing. Halectric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

EQUIPMENT WANTED

WE are interested in buying any quantity of Electric or Gas Refrigerators of your discontinued new or used models. All merchandise is figured F.O.B. your warehouse, terms cash. Please advise model numbers and sizes when writing, and we will inform you promptly as to our bids. Box 646.

EQUIPMENT FOR SALE

FOR SALE—The following genuine Frigidaire parts, reconditioned like new. Floats packed in new cartons. 50 No. 82744 Float Valves @ $6.00 each. 50 No. 84537 Liquid Line Valves @ $1.75 each. 50 No. 84538 Suction Line Valves @ $1.75 each. Box 645.

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TO become increasingly successful through the years that have passed, and to add to that success in the past year, is indicative of the

FAITH

that is *entrusted* in our care. That faith *will* not be betrayed.

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Complete and practical Refrigeration Training by extension methods.

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NOW! PEERLESS FIN COILS AND REFRIGERATION ACCESSORIES are MANUFACTURED in NEW YORK as well as CHICAGO.

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The NEW YORK factory is NOT a warehouse—stocking a few miscellaneous sizes of coils—it is a fully equipped factory, capable of shipping the SAME DAY any one of the 24,576 Fin Coils that compose the PEERLESS line.

Write—or Wire the nearest PEERLESS factory for your copy of the catalog that will SAVE you money by eliminating useless fin coil Inventories.

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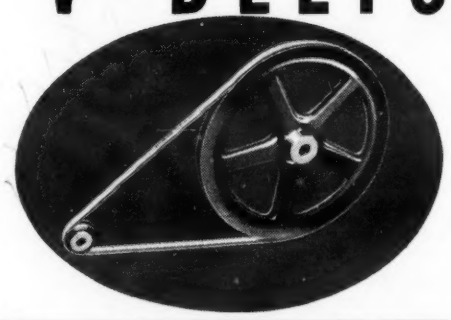
CHICAGO FACTORY — 515 W. 35th STREET—CHICAGO

DAYTON V•BELTS

There is a Dayton V-Belt made especially for all makes and types of refrigerators, washing machines and other appliances. A stock is available near you. Send for price list and name of your nearest distributor.



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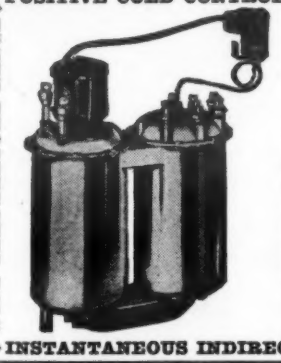

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